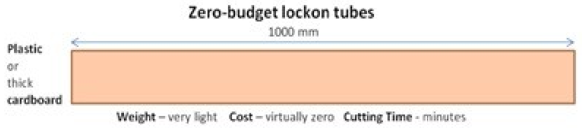
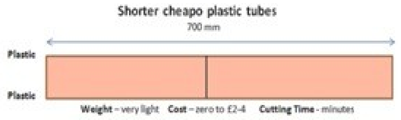
Build-Your-Own-Lockon Guide

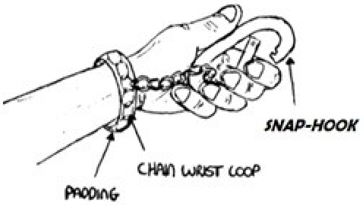
In the UK the principles of NVDA (Non-Violent Direct Action) can be traced back to the women's decade-long protest at Greenham Common nuclear missile base (1981-2000). Blockading equipment such as tripods, lockons, etc were developed in their current form during the Anti-Roads campaigns of the 1990s. They have been evolved and refined by many groups ever since.

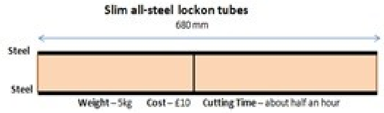
There are small groups and "cottage-industries" around the UK developing blockading equipment of all kinds. Some of the best experience has been developed historically by RTS (Reclaim the Streets) in the 1990s, Climate Camp in the 2000s, more recently by RTP (Reclaim the Power), over a long period by the Peace Movement, and around protest camps such as those opposing Fracking, HS2, and others. However, due to security issues this expertise is hard to access and on-line information is fragmentary.

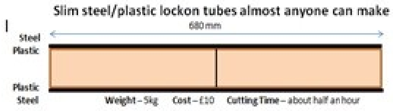
With the rise of Extinction Rebellion (XR) there are a growing number of groups wanting to build their own equipment. This guide pulls together experience from a range of UK groups. It aims to skill-share and provide a range of designs which can be built according to the workshop tools & skills available.

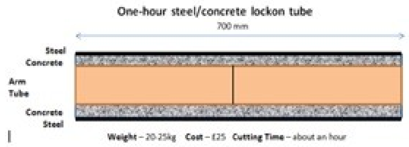

Zero-budget lockon tubes
1000 mm
Plastic or thick cardboard
Weight – very light Cost – virtually zero Cutting Time - minutes

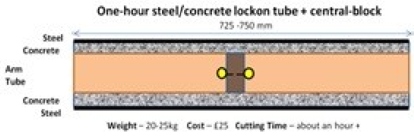

Shorter cheapo plastic tubes
700 mm
Plastic
Plastic
Weight – very light Cost – zero to £2-4 Cutting Time - minutes

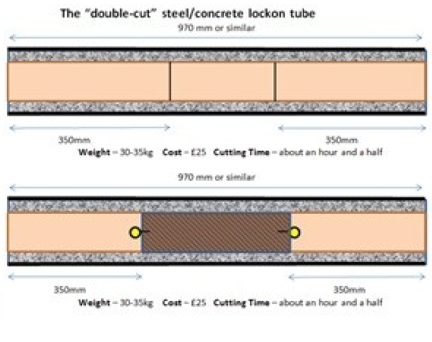


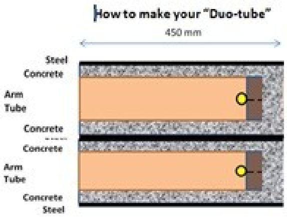

Slim all-steel lockon tubes
680 mm
Steel
Steel
Weight – 5kg Cost – £10 Cutting Time – about half an hour

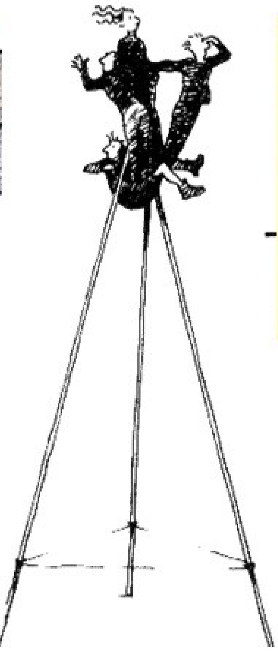

Slim steel/plastic lockon tubes almost anyone can make
680 mm
Steel
Plastic
Plastic
Steel
Weight – 5kg Cost – £10 Cutting Time – about half an hour

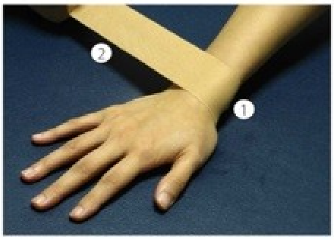

One-hour steel/concrete lockon tube
700 mm
Steel
Concrete
Arm Tube
Concrete
Steel
Weight – 20-25kg Cost – £25 Cutting Time – about an hour

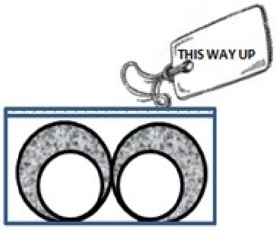

One-hour steel/concrete lockon tube + central-block
725 -750 mm
Steel
Concrete
Arm Tube
Concrete
Steel
Weight – 20-25kg Cost – £25 Cutting Time – about an hour +

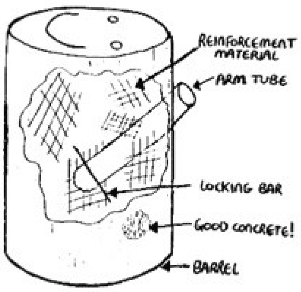

The "double-cut" steel/concrete lockon tube
970 mm or similar
350mm
350mm
Weight – 30-35kg Cost – £25 Cutting Time – about an hour and a half
970 mm or similar
350mm
350mm
Weight – 30-35kg Cost – £25 Cutting Time – about an hour and a half











International Perspective

Here in the UK the police are not supposed to hurt/injure people. In full-view in a public place watched by LOs (Legal Observers) and supporters they should have little option but to behave themselves. This is not so everywhere. In some countries, police will systematically injure people! If there's no tradition of NVDA in your country proceed with caution. You may have to blaze-a-trail using the media, doing actions with a clear moral position, and keeping public support on your side.

Background reading

The **Earth First - Direct Action Manual** has a wealth of useful information on all sorts of NVDA, from tree-houses to mono-pods, plus much wisdom on organising, security, team-work etc. It's American so measurements and language differ, it's a few years old, but its a great read! Details of lock-ons (Lock-boxes) are rather general, but it's a good starting point **[1]**
Direct Action Movement (DAM) an Australian website has similar resources on Lockons etc **[2]**
Wikipedia includes a brief entry on Lockons **[3]**
Delia Smith's book of "Basic Blockading" is a great read on planning & the role of your support team **[4]**
History buffs can checkout "**Road Raging"** written about experience in the 1990s Anti-Roads protests **[5]**
And a lovely general read if you find it is Kate Evans "**Copse: Cartoon Book of Tree Protesting**" **[6]**

National Eviction Team claim extensive experience of protester removal with an informative website **[7]**
The **National Policing Improvement Agency** produced a useful report of how they dealt with over 500 protestor removals during the Faslane-365 blockade in Scotland 2006-2007 **[8]**

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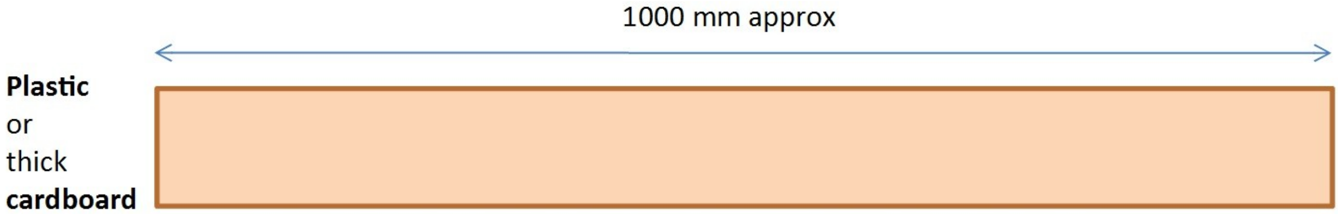
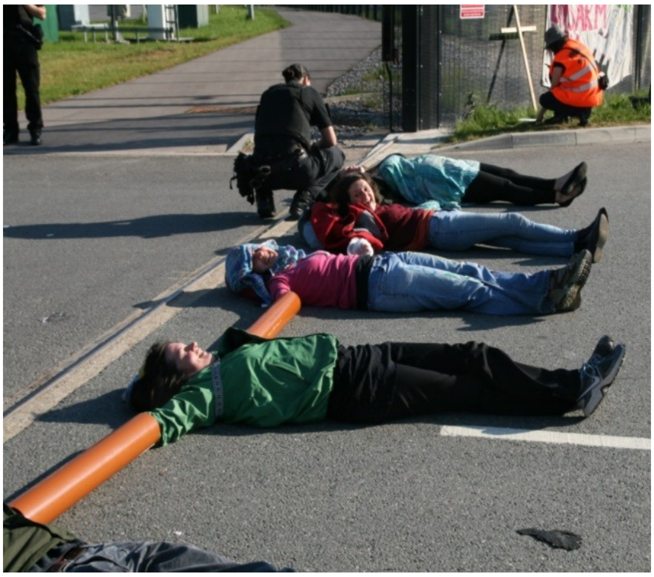
1) Zero-budget lockon tubes

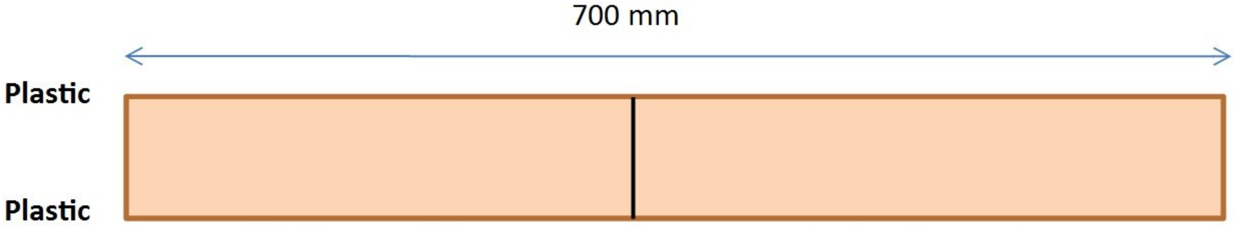


Weight – very light **Cost** – perhaps zero **Cutting Time** - minutes



Suppose you and your group want to do a road-blockade this afternoon but you're all skint! Just check-out skips behind your local friendly carpet shop – bet you'll find some large sturdy cardboard tubes begging to be taken away. Or with more time you'll find plastic drain-pipe in builders skips. Actually what you're after is "soil-pipe" about 110mm (4 inches) wide - you'll want to wash it well on the inside with an old mop! If you cut these into one metre lengths you can simply hold hands inside - the tubes are long enough so the cops can't slide them aside to get to your fingers. Sorted! It didn't cost you a bean. They're great if your art team decorate them. Cardboard will go floppy in wet weather! But hey, you can always get more!

2) Shorter cheapo plastic tubes



Weight – very light **Cost** – zero to £2-4 **Cutting Time** - minutes

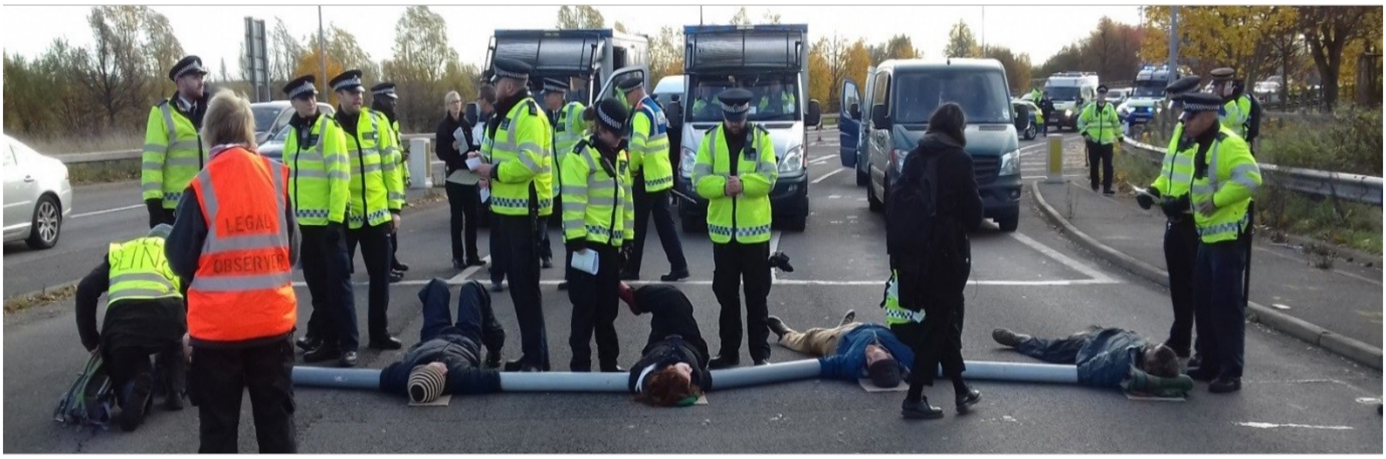
For a few pence more you can make tubes that are slightly shorter, say 700mm. You and your buddy clip-on with bracelets (see section 3) to a central bolt. 700mm just about comes up to your elbows but the cops can't slide it either way to reach your hands or the bracelets. Tubes this length are easier to conceal and can be carried around in a sports-bag, rucksack, suitcase, bin-liners or 50pence IKEA bag.

Plastic tube cuts easily with a carpentry saw or similar. Drill a 7mm hole through the middle of the tube (ie 350mm from the ends) and insert a "M6 150mm long coach-bolt" (Toolstation 67208 £1.33 for a pack of ten) put a M6 Penny washer (Toolstation 86424 £0.82 for a pack of ten) on the end of the bolt and do the nut up with your fingers, pliers or spanner. You'll find the "square" just under the head of the coach-bolt bites into the plastic so it doesn't spin. Saw the end of the coach-bolt off with a hacksaw OR better simply whack it over with a hammer and bind it with gaffer tape. You now have a basic but surprisingly effective lockon tube which will still need the Protester Removal Team (PRT) "cutting team" to get you out! If you're making a lot the drilling is a tad swifter with extra long drill bits such as 6.5mm x 148mm (Toolstation 24349 £7.02 for five).

If you can't find enough 110mm plastic tube in your local skips or sticking out from building sites, splash out on new stuff. You can buy 6m (2 x 3m lengths) of orange/brown underground pipe (Toolstation 75373 £15.28) or the same in black or grey which is slightly dearer (Toolstation 73602 £21.15).

You can sometimes get it free from big plumbing warehouses, such as "Graham", which uses plastic tubes as packaging, and sometimes carpet warehouses. Ask nicely and explain you need it for an "*art project*".

So, how effective are plastic tubes? The first major action done by XR (then called Rising Up) in autumn 2016 against the Heathrow expansion was joining a blockade of the main road to the airport. There were cops everywhere! To deploy quickly they used simple plastic tubes as they were light and easy to carry. Five protesters locked on across the road. The Police arrived quickly but had to control the traffic, contact their superiors, do assessments, fill in forms, issuing warnings, wait for the "Protester Removal Team" (PRT) to arrive – that took most of an hour even though cutting the plastic tubes took only minutes.



Plastic tubes were used by some groups during the various XR Rebellions to be carried discretely around town centres; their lightness is also choice when climbing. Maybe your action is more symbolic? You don't think the cops will call in a cutting team? Or you have to dive round a line of security guards? Then these may be the tube-of-choice! Or maybe you're blocking a road in a provincial city that isn't up to speed on this sort of protest - the PRT might take hours to arrive, if ever! Once protesters even improvised by holding hands inside a foam camping mat covered with gaffer tape! Yes it worked!!!

Basically, anything used as a lockon tube will be worthwhile!

How long (in length) is long enough for a lockon tube? Everyone worries about this! Make them too long and they're harder to conceal and heavier too. They can also be uncomfortable if the tube is at an awkward angle. Make them too short and the cops might reach your bracelet with a hook, pull it out and cut it, duuuuu! And it has been known for them to try to get a very slim police hand down the tube alongside yours! People have standardised on 700mm total length with no complaints so far. Some are maybe prepared to try a tad shorter, but see Section 20 on "Using Cuffs".

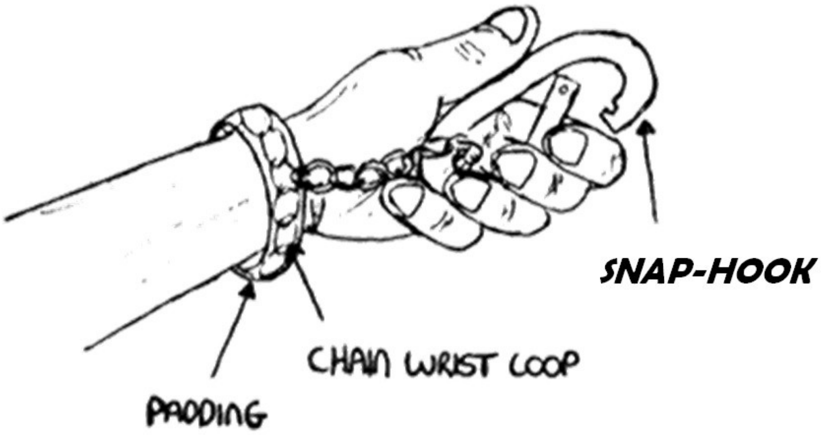
3) Bracelets

To clip-on to the coach-bolt you need a karabiner/carabineers type device. Please **DON'T** buy expensive climbing ones, they have much more important uses when working at height. You can sometimes get light alloy ones from Poundland type shops or attached to drinks bottles. Most people buy 6mm steel "Snap hooks" (Toolstation 75384 £2.02 for a pack of ten). What a bargain!

For the bracelet people have used string, cord, webbing, or thin rope but they're generally too easy to cut. One group swears by 6mm poly-prop rope bound with medical micropore tape claiming it jams in jaws of the cutters!

Length is important and hands/wrists vary in size. You're aiming the bracelet is a snug fit around the wrist and just the right length so the snap-hook fits between the thumb and first-finger. Hence people can operate it inside the tube to clip-on to the coach-bolt etc **BUT without too much slack**.

Probably the strongest and most effective bracelet uses **chain**. People have experimented with other designs but keep returning to this one. Not only for strength but also for simplicity, it's adjustable, plus it's easy-to-understand and to use in those rushed & stressful moments.



Buy 4x26x2500 Black Japanned chain (Toolstation 44469 £2.81) or a longer length of Bright Steel chain 4x26x10m (Toolstation 11615 £11.28). You'll need to cut it into short lengths, **people find about 320 mm works well but feel free to experiment.** You can clamp it and saw it with a hack-saw. Or use big bolt-cutters, or an angle-grinder (see safety notes below). For fast and safe work find a length of wood and drive in two nails or screws **320mm** apart. Fit the chain over the nails/screws and simply cut the next link beyond - having the chain over the nails or screws stops it whipping around as you cut it. You'll find this really helps you cut the chain reliably to length, safely and quickly.

Next cut up some old bicycle inner tube (readily available from your local bike shop or cooperative) into about 200mm lengths. Wriggle the chain through the inner tube. Thread one end of the chain back through the last link at the other end. Attach your snap-hook through the last link at the free end. Try it for size and comfort. People with very slim wrists can move the snap-hook back one or even two links. Just make sure the chain is fairly taut and you can operate the snap-hook to clip-on and un-clip easily. If the chain keeps working loose secure it with a small cable-tie between the links, but remember this stops you taking the bracelet off! The bicycle inner tube gives some padding to the user's wrist but its real purpose is it stops the chain getting tangled when you've made a lot.

Sometimes people donate random types of chain - not all types will "*thread through their own links*" as in threading-a-needle. Always check. You'll see what we mean when this happens.

See below the special bracelets recommended for "Greenpeace" tubes.

4) Safety in the workshop

The basic rules of any workshop, large or small, is protect yourself and others from harm, treat tools with respect, keep the workplace tidy, avoid trip-hazards, and clean up your mess.

As soon as you progress to power-tools please double-down on safety. Tie long hair back and wear a hat. Remove pendants, necklaces, jewellery etc. Avoid loose sleeves or anything that can get caught in power tools. Clothes are best practical, tough and un-phased by dirt. Footwear should be sturdy and if lifting heavy objects should have protective toe-caps. Use eye-protection to avoid grit flying into your eyes. Use hearing-defenders when using very noisy machinery. Wear a mask when creating a lot of dust. **Wear work-wear gloves - Toolstation "Palm Gloves" at just over a pound a pair are great!**

Always consider the safety of others when working. Check the electrical safety of equipment and cables, avoid damp conditions, check there's a RCD circuit-breaker in the consumer unit - if not use your own. (e.g. Toolstation 12514, £8.98)

Always check the safety guard on power tools. A basic 115mm angle-grinder is a fairly safe tool to use **BUT** could sever your finger, a disintegrating disc could pop your eye, and if caught in your clothes will rip them to shreds in moments.

It's always good to ask advice on how to use equipment – we all need to skill-share.

- No loose clothing
- No jewellery
- Tuck ties in
- Roll up sleeves
- Wear apron
- Tie back long hair
- Wear strong shoes
- Wear safety equipment

Another good reason for keeping your hair safely in your hat and wearing gloves is to NOT leave your DNA and fingerprints all over the lockons, especially when tearing gaffer tape!

5) How Protester Removal Teams (PRT) work

The **PRT** usually arrive in their own van, sometimes with ladders on the roof, sometimes with a built-in generator, and occasionally with a trailer. They usually wear black boiler-suits, they should have police numbers visible, and are usually headed up by a sergeant.
The good news is they're intelligent, well trained, skilled at their job, independently minded, and will work very carefully taking meticulous care. They'll want to get on first-name terms with you, so take care. They're well practised at exuding a positive confident attitude, friendly, respectful, jokey and matey. They usually film themselves as they work. They'll often be watched by the media. Of course, they should be carefully observed by the Legal Observers too.

BEWARE - they'll lie and use trickery or deceit to get their own way and to get their job done quicker.

**BEWARE – "Stockholm Syndrome" type psychological effects when "*victims bond with their captors*"
Don't be duped into giving up or even actually cooperating! STAY INERT AND LIMP!**

They'll assess your lockon and use prescribed cutting and removal methods. They are intelligent and will usually guess how your tube is constructed. Hence deploying a variety of designs or having hidden internal extra layers is useful. They may measure the thickness of the tube or its layers. They may slide a tape measure inside. They may look inside to see how your hand is attached using a sort of endoscope.

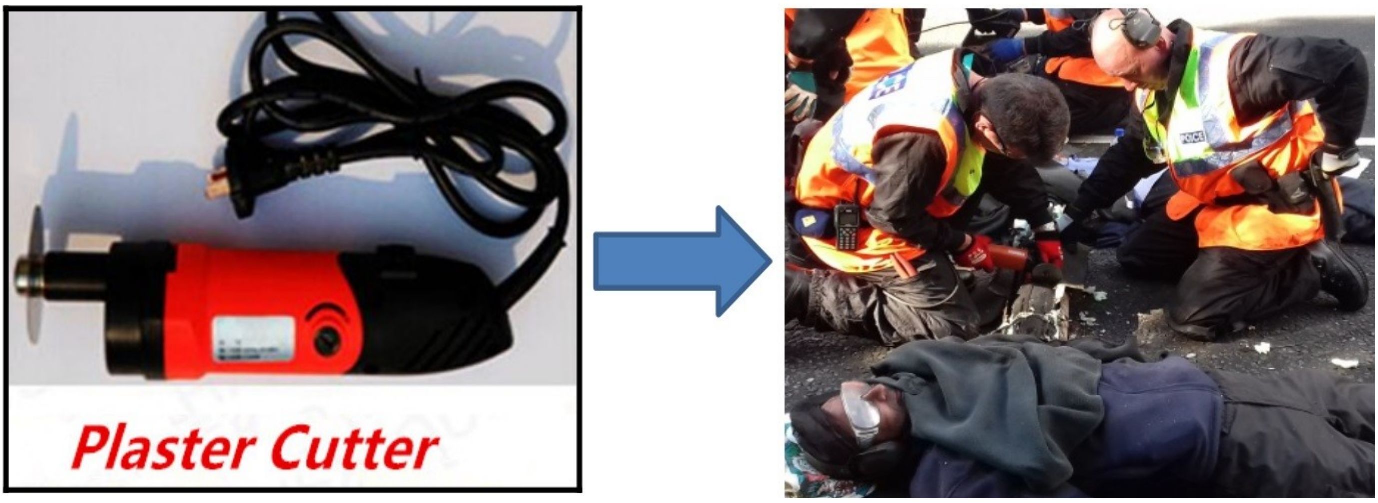
The videos in these news reports [9] & [10] are REALLY REALLY informative

Also watch this fab one hour documentary about XR with informative cutting scenes [11]

They'll usually protect your body with a plastic shield or drape you with leather blankets. They'll also usually protect you with ear-defenders and goggles/face-mask. They'll often slide bendy metal shields or pieces of leather blanket inside the tube to keep your arm or hand away from the cutting.
Occasionally they may try to hook your chain bracelet from the outside – that's why it needs to be taut!
In general they'll cut down through the middle of tube to reach the coach-bolt. Or they may cut **"windows"** or drill circular holes to reach the bracelets.
If they're unsure about the design of your lockon they may cut along the entire length of the tube on both sides and remove it layer by layer, called "**longitudinal cutting"**.

We've not heard of reports of any injures to-date.

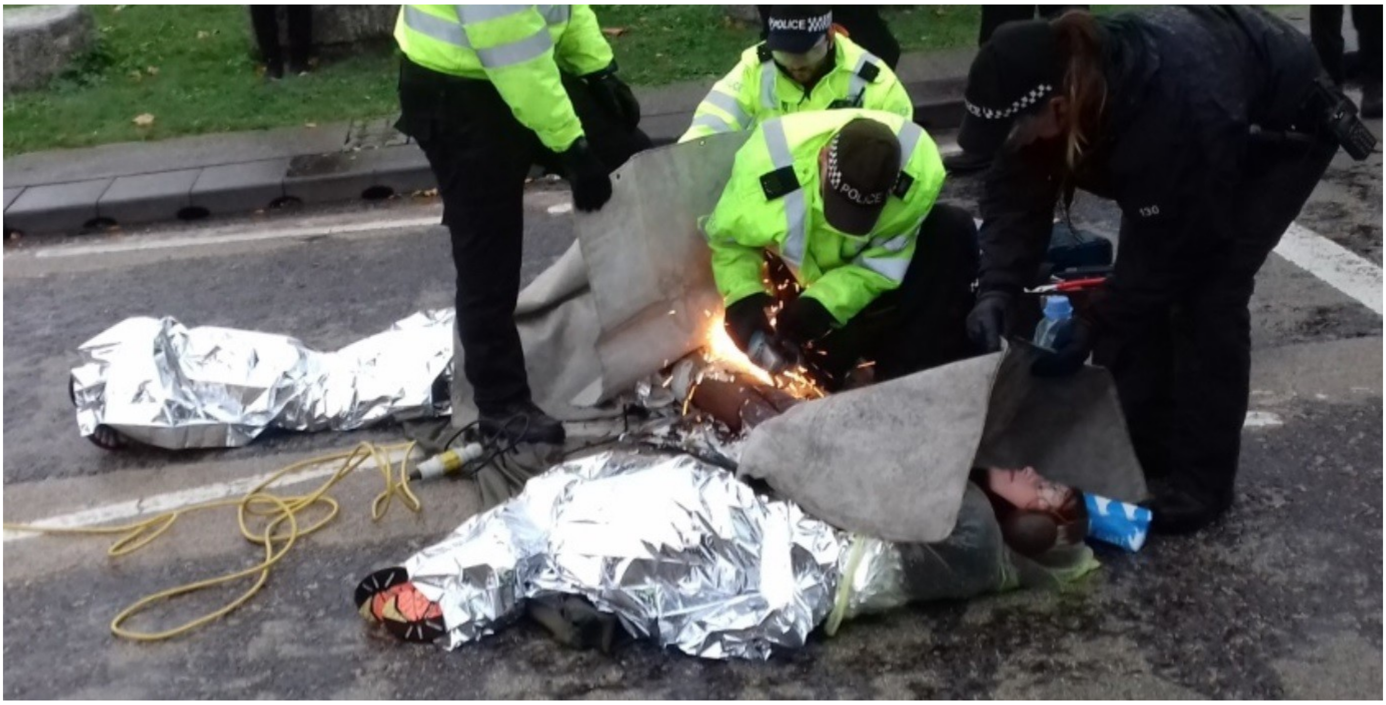
If your lockon has a plastic tube next to your arm they should clear down to it using angle grinders, hammers & chisels, etc. Then they'll cut through the plastic tube using a vibrating saw – the sort used in hospitals to remove plaster casts. They may demonstrate on themselves to show it really doesn't cut skin!



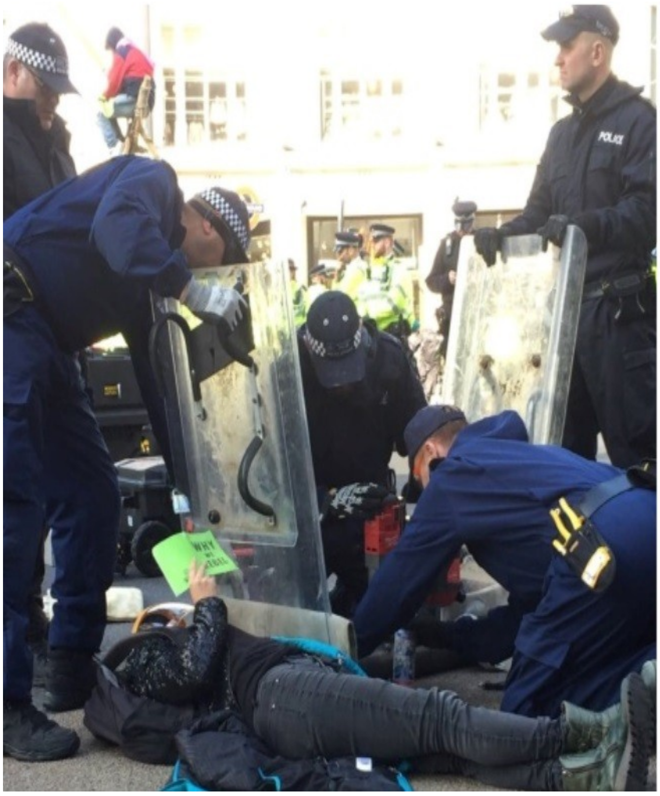
PRT using plaster cutter to cut through the plastic inner tube of a lockon

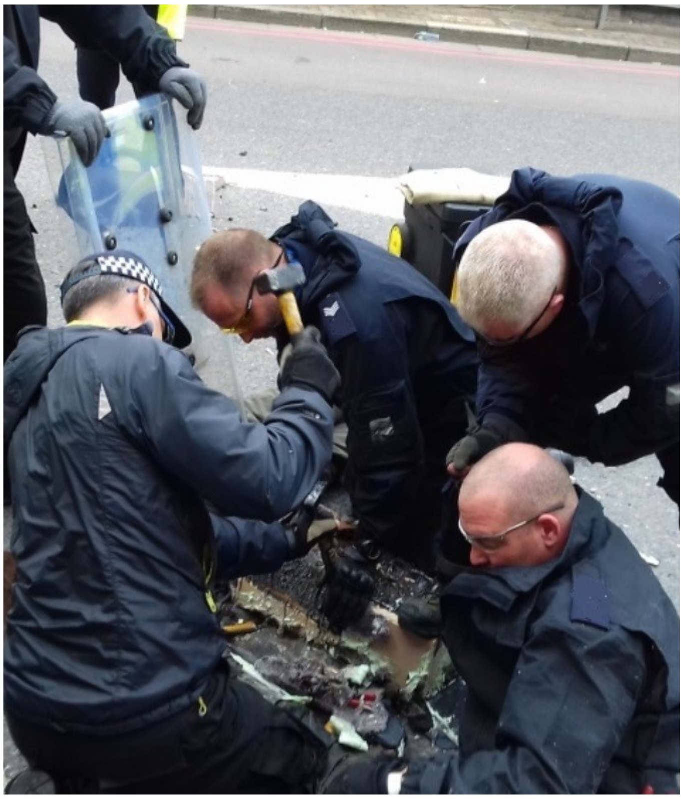
BE AWARE – security guards, bailiffs, the National Eviction Team, and similar groups play by completely different rules - get savvy advice. Lockons and other blockading actions are much safer on public highway or in full public view whenever possible. The role of Legal Observers and your supporters is paramount.

Before the PRT start work they may read out some sort of safety statement. You can call the Legal Observer to witness/record if you can't agree because you don't know the quality of their training etc etc.



If you've been in a lock-on for a long time your arm may be stiff and your hand cold or cramped and you're unable to work the snaphook - explain this is why you can't self-release and you want them to protect your hand from the sparks by inserting a shield or blanket **and firmly insist they do so.**





PRT using battery powered drilling rig to drill access holes in "Greenpeace" lockon tube. Generators can supply unlimited electric power but are hard to deploy in complex urban situations such as XR camps. Currently PRTs mostly use battery powered tools. If these run flat they may use a hammer and chisel!

MOVING PROTESTERS- Occasionally they'll move two or even three blockaders plus their tubes to the side of the road using trolleys. It's so easy it's surprising they don't always do it. If this happens consider a fresh deployment of three people in a triangle (fiddly but can be done!) or more people in a circle.

Understanding how the PRT work sets important safety rules for how you make your lockons

6) Safety rules of lockon construction

As a lockon-maker you have a **MASSIVE SAFETY RESPONSIBILITY**. Please consider how important this is. Someone, you may never meet, is trusting enough to put their arm inside your handiwork, while the police wield some serious cutting machinery just millimetres from their flesh & blood! Neither the blockaders or the cutting team should risk injury as a result of your work.

Most people agree these **SACRED RULES OF LOCKON CONSTRUCTION**!

A. Always-Plastic-Next-To-The-Skin. So you've just found a 110mm wide cast iron drain pipe at the scrap yard and it's soooo tempting to use it as the arm-tube in your next lockon. Just remember the person inside will be showered with sparks and exposed to scary heat. The police will be encouraging them to self-release and it wouldn't be surprising if they did! Using a plastic tube next to the arm give the cutting team the option to clear down to that final layer then make the last cut using a vibrating saw (as used in hospitals to remove plaster casts).

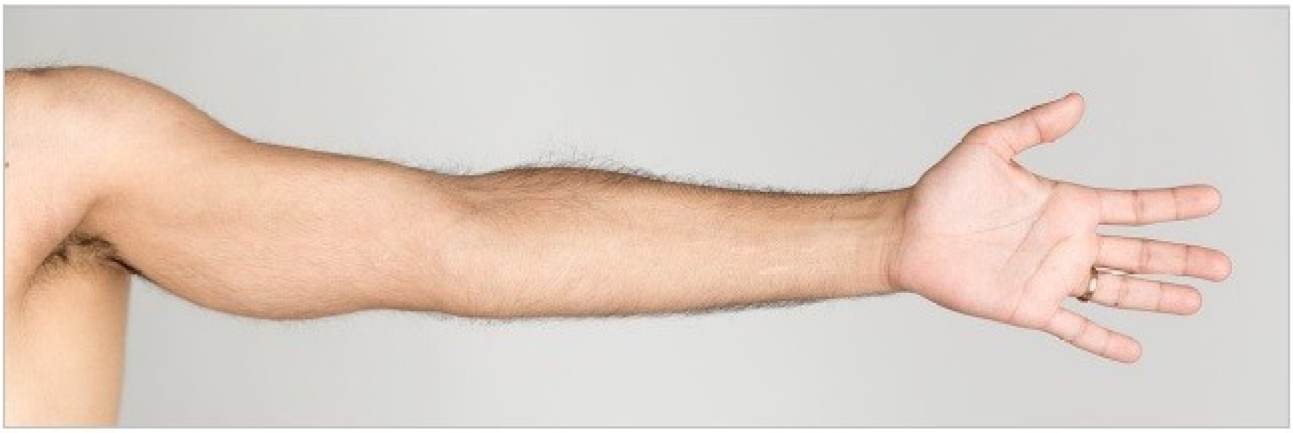
B. Making a safe lockon – all the materials used should be **INERT** eg plastic, metal, concrete, etc. Do not use asbestos (old roofing material) or any material that's toxic or can catch fire. Don't incorporate cigarette lighters or gas canisters or anything that can fly out as shrapnel. Don't use items which are clearly stolen such as identifiable metal road-signs etc. Some people want to include tubes of paint - but these could spray out in the cutters face and might be considered assault. Rubber or thick plastic could burn when being cut with an angle grinder. Don't incorporate barbed wire or sharp objects – again there's the risk of injury. Plus these can be concocted into a damning media story. There should be no pointy or jagged metal objects (Dragons Teeth Warning – see below) needles, shrapnel, or sharp metal edges. All edges should be ground off smooth or bound with gaffer tape – you get the idea!

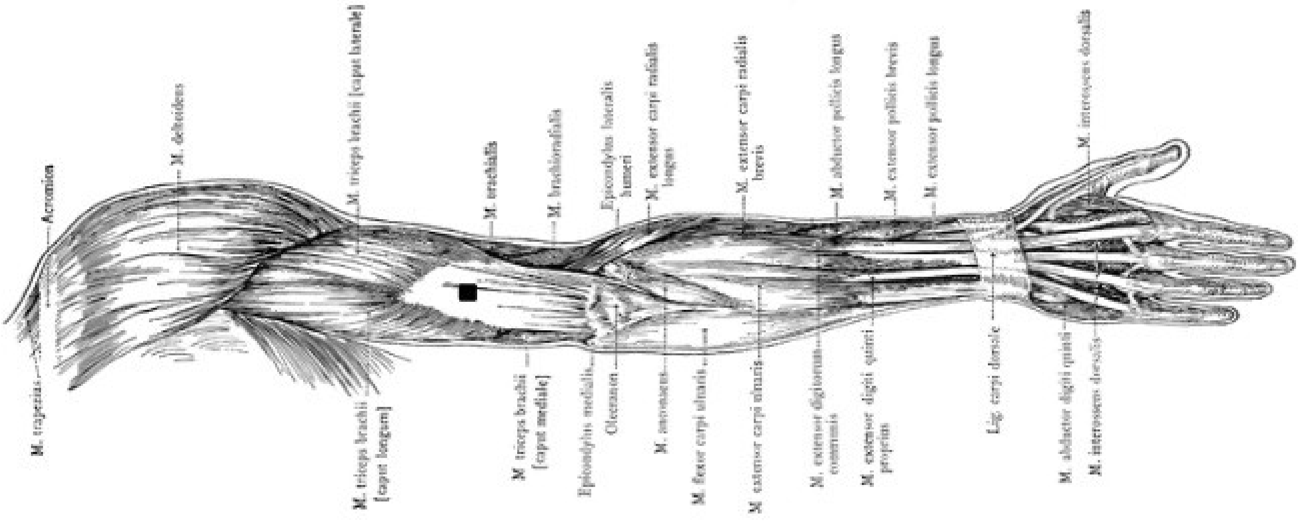
Cotton-wool – there's the now famous story of the XR "pink bath tub" lockon action where the arm-tubes were stuffed with cotton wool and the PRT informed. The arm-tubes were simple metal tubes so the sparks from the cutting could have ignited the cotton wool. It took several hours for a removal method to be approved – some wire with a hook on the end! Worth considering in the future?

PRT using wire hook to remove cotton wool from lockon tubes on the pink bath →

A salutary tale – some years ago someone built a lockon tube inside a washing machine drum to look like a giant samba drum. To cut holes through the sides they "star-cut" the metal with an angle grinder and bent the metal triangles inside. When the cutting team worked their way down on the inside these really looked like "**Dragons Teeth**" - in court this would have looked really damning. The PRT announced they thought "*they'd been put there to injure them*" and could charge the people locked-on with attempted assault. They duly unlocked and the blockade was broken. Duuuuu!

Why many people believe the innermost tube should be PLASTIC !




M. trapezius
Acromion
M. deltoideus
M. triceps brachii [caput longum]
M. triceps brachii [caput laterale]
M. brachialis
M triceps brachii [caput mediale]
M. brachioradialis
Epicondylus medialis
Olecranon
Epicondylus lateralis humeri
M. anconaeus
M. extensor carpi radialis longus
M. flexor carpi ulnaris
M. extensor carpi radialis brevis
M extensor carpi ulnaris
M. extensor digitorum communis
M. abductor pollicis longus
M. extensor digiti quinti proprius
M. extensor pollicis brevis
M. extensor pollicis longus
Lig. carpi dorsale
M. abductor digiti quinti
M. interosseus dorsalis
M. interosseus dorsalis

Not everyone agrees.

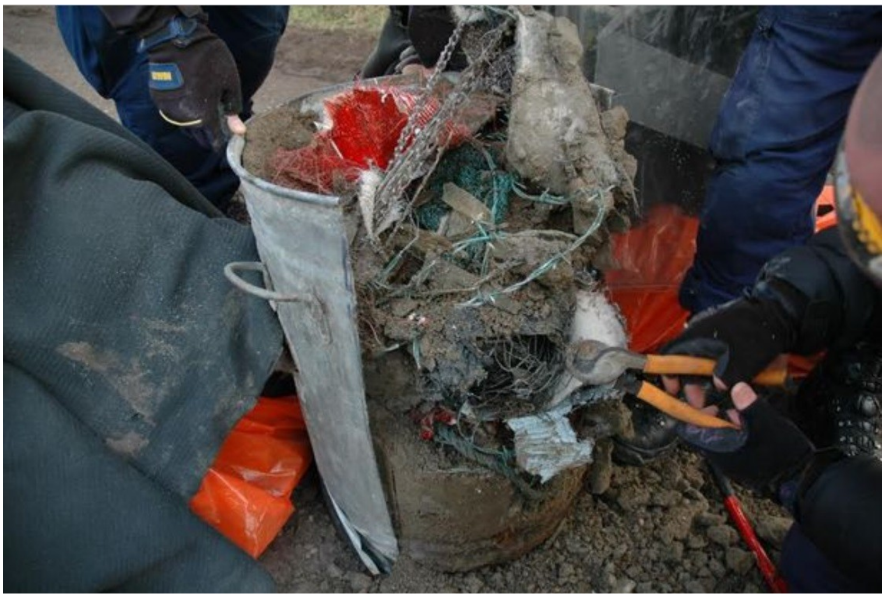
Just saying !

Police will be quick to hint or claim dangers via the media:-

"Extinction Rebellion protesters hide NAILS and BLADES in 'lock-on' tubes to make removing them more dangerous, police claim" **[12]**

"We've had protestors making it harder and more dangerous for us, and may have nails in it, blades in it, any type of sharp metal in the concrete……." **[13]**

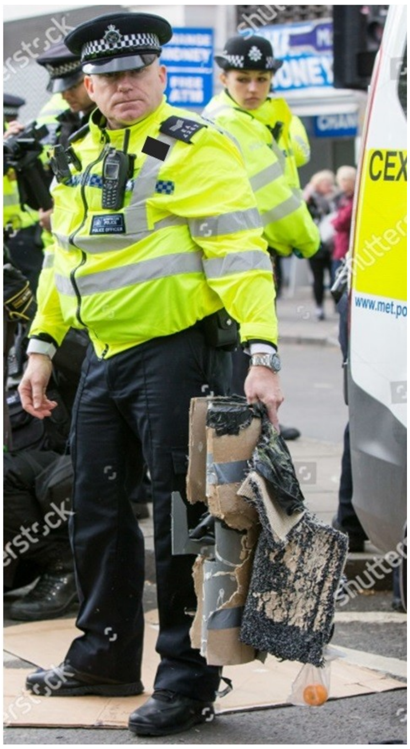
"There are often booby traps as well, such as pressurised aerosol cans put in the concrete to explode when the enforcement agent tries to remove them." **[14]**



"Protesters lock-on to 'booby-trapped' concrete drum filled with barbed wire and broken glass" **[15]**

7) Cheapo outer layers

If you've made some plastic tubes some people want to add extra layers on the outside. Anything easy to work with will do. Extra layers of cardboard or plastic tube can be added by slitting along the length and sliding or snapping it on. People also stick layers of carpet together like a giant swiss-roll using PVA cheapo art/builders glue stuff, roll in layers of chicken wire, and plenty of gaffer tape. Some people have used layers of resin and chickenwire. You can find "spiral-wound" ventilation pipe about 150mm or wider in skips or scrapyards which cuts easily with a hacksaw or angle grinder. Commonly available is flexible corrugated "flue pipe" about 150mm wide and being stainless steel looks cool and shiny! **(Safety rules – check all metal edges for "Dragons Teeth"! Cut metal edges can be as sharp as a knife so file them flat or bind with gaffer tape).** Your group can assemble a whole collection of lockons for mere pence. Individually they may not take so long to cut but used in a crowd they'll look amazing and will buy-time blockading.



Police holding light-weight tube cut open showing layers

8) Getting to know your scrapyards

To find more durable/harder-to-cut materials you'll probably need to get to know your local scrap yards. It's much much cheaper to buy scrap steel than to buy new steel.

Take your tape measure so you can check sizes. They're mucky places in wet weather so wear tough footwear and practical clothes. There's vehicles and scary machinery moving around so hi-viz really helps the safety culture and your credibility with the staff.

Scrap yards vary a lot depending on your local industries. Car-breaker type scrap yards probably aren't much use to you unless you want specific auto-parts eg wheel rims etc? Secondly, be aware some don't allow the public in for safety reasons. Thirdly check if they'll let you buy, not all yards do this. On the other hand some yards specialise in re-selling useful materials. Be sensible and amiable with the staff and don't piss them off or you'll get cold-shouldered or even banned!

Most scrap yard collect random metal junk from bed-ends to washing machines piled up into a massive heap. **DON'T CLIMB ON THE HEAP!** It's really dangerous and will get you banned! You'll have to hunt round the edges for what you want. Mostly it's quite hard to find stuff you can use.

Some yards separate out more solid/heavy steel materials and what you're looking for is metal tubes, round or maybe square sections. You might be after inner arm-tube about 110mm wide or for outer tubes about 150-200mm wide. Wider stuff may be too heavy to lift, but could be useful for a car/vehicle lockon. It will usually be in random lengths so you'll need to be able to transport it and cut it into the lengths you want. Some yards have portable angles grinders and could cut to length if you ask - well worth it even for a small charge.

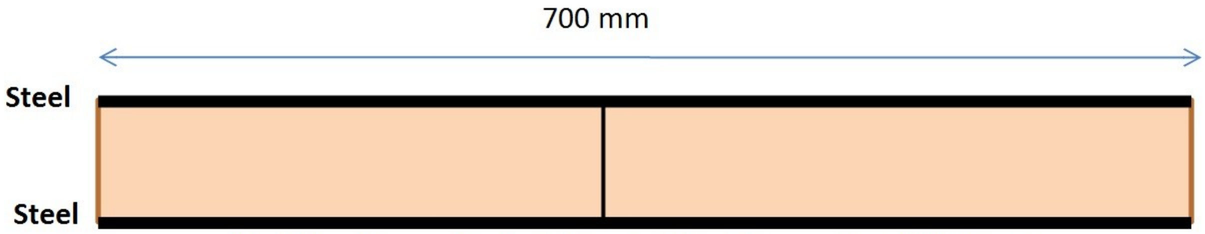
Butane and Propane gas "bottle" are commonly available but maybe a tad wide. Some scrap yards stock empty oxygen and acetylene gas cylinders people say can be a useful width. Cutting them might be hard. **All gas containers should be flushed with water first to remove flammable gases.**

Aluminium probably isn't what you're looking for as it's too soft and easy to cut. Stainless steel is tougher than ordinary steel but costs several times more and is rarely worth the extra. Depending on your local industries you might get lucky with a regular supply of suitable width and length steel tubes. Be prepared to ask as the supply may be intermittent.

At some point someone will take an interest in your project and ask you what you're making. You can tell them the real story and hope for their support **OR** give them a cover-story that it's an *"art project" or "garden sculpture"*. It's your call. Most people prefer the second option as it's less likely to run aground on prejudice or media mis-information, **now or in the future**, which could wipe-out your entire supply line.

9) Slim all-steel “Greenpeace” lockon tubes

Greenpeace and others have been making these for years. They’re for people with workshops, drilling & welding equipment/skills, and a budget **[16]**. The design is very simple and good for mass-production. Some people aren't comfortable with the lack of a plastic liner, but that’s a personal opinion. The cutting time is about 20-30mins. The tubes are slim, they’re not too heavy, hence fairly easy to deploy.



Weight – 5kg **Cost** – £10 **Cutting Time** – about 20-30 mins

Find your local “steel supplier/stockist” using google etc, most bigger cities have at least one. It’s good to go in person and talk to the staff across the counter, maybe pay in cash, and often what you need may take a week or two to arrive. For smaller orders it’s probably cheaper to collect from them. UK steel seemed to be sold in metric equivalent of original “imperial” sizes (inches) so the mm sizes can seem quite odd. What you’re looking for is steel tube about 110mm wide (actually 114.3mm outside diameter) and usually about 3.6mm thick. The standard size is the rather enormous 7.5metre lengths. Oddly the exact length seems to vary slightly between 7.5m up to 8.0m for reasons no-one can explain, so if you’re being exact about your maths check with your supplier. You usually have to buy a complete length but it can be cut down into the shorter lengths you want for typically a pound a cut. **Bargain!** Do the maths – 114.3mm steel tube comes in a 7.65m length and cut into ELEVEN lengths gives you lockon tubes about 695mm long, all for around about £100 (hunt around and haggle for the best price). You’ll also need some 3mm rod – that’s really cheap. It’s technically called “mild steel” but often just called “black steel”.

Drill through the middle of the tube. At a pinch use a hand-held power drill but a pillar drill makes this much easier. People find “Tungsten” or better “Cobalt” drill bits and the recommended lubricant worthwhile. You’ll be aiming to insert a short length of 3mm steel rod through the hole and weld the ends. Sometimes nuts or strips of metal can be welded over the ends and in other fake positions to fool the PRT but no one is sure this is really worthwhile.

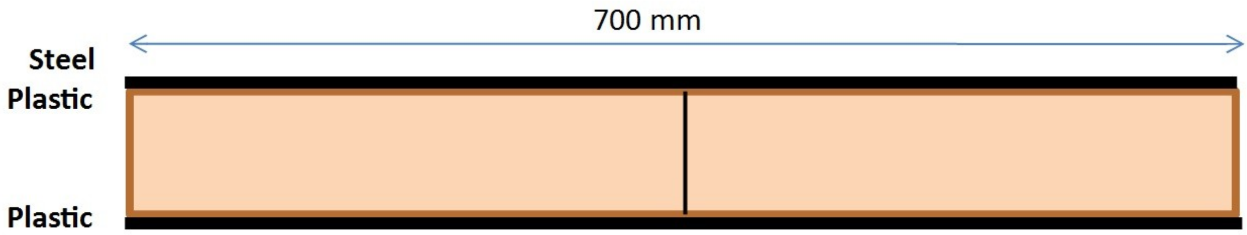
Clean the inside of the steel tube before use as there can be surprising amounts of muck!

There’s no plastic inner arm tube, so these lockons are best worn by people up for enduring sparks and heat.

A lot were made for the 2019 October Rebellion, they were easy to deploy and proved effective. Many were made 900mm long to fit the Lego/U-Build boxes (see Section 35) but for general use about 700mm is sufficient.

See below special improved bracelets and modifications recommended for “Greenpeace” tubes.

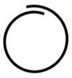
10) DIY Greenpeace tubes almost anyone can make



Weight – 5kg **Cost** – £10 **Cutting Time** – about 20-30 mins

If you don't have a pillar drill and welding equipment/skill here's a simple alternative. Order your batch of 114.3mm diameter 3.6mm thick and 695mm long tubes steel tubes as above. You can line these steel tubes with your 110mm plastic tube. Some people prefer the brown tube to give a colour difference to help the cutting team. Some people have even tried incorporated a layer of very thin carpet (optional).

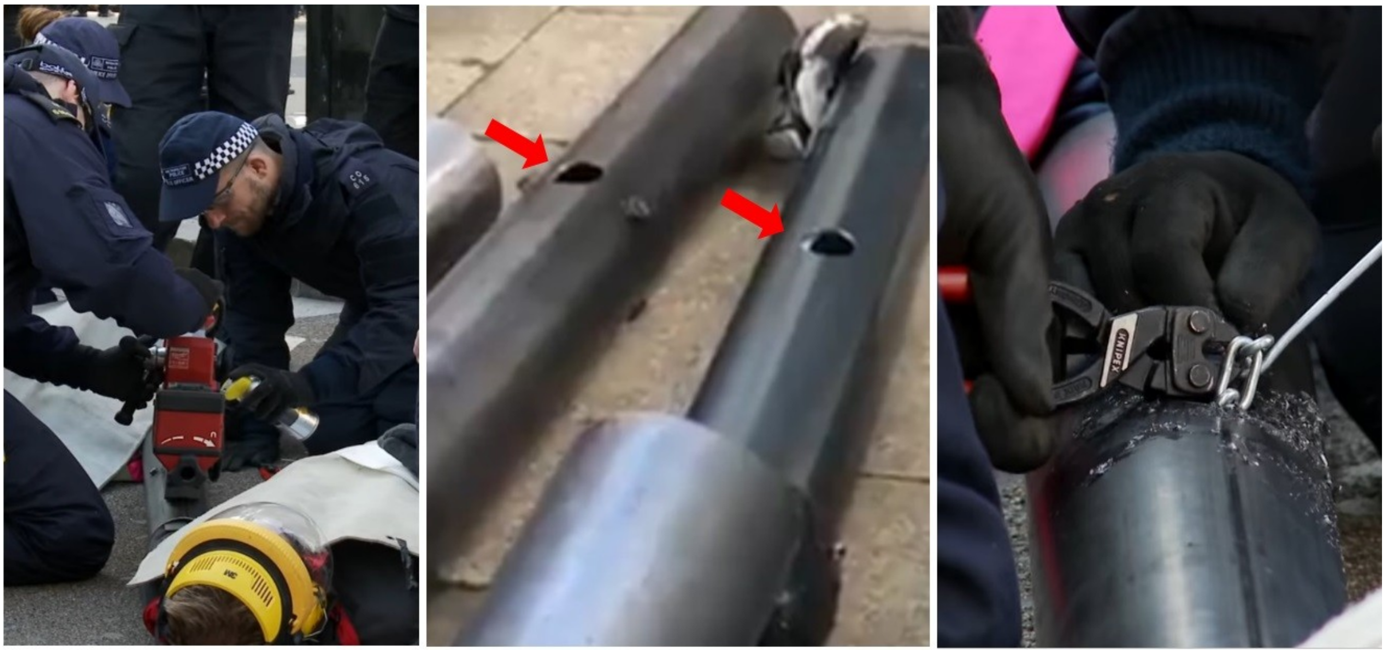
Cut the plastic tube to the same length as your steel tube. Then slit along the length of the tube. You can do a reasonable job clamping the tube and using a carpentry saw. A table saw makes this job much easier if you have one. An angle-grinder is quick but produces lots of dust. Marking neatly with pencil or fine marker and cutting reasonably neatly does help a lot. Then snail-roll so it fits inside the steel tube --> Or, mark and cut out a strip about 10mm wide - be prepared to experiment to find the right amount to remove. Drill your 7mm holes half way along and fit the coach-bolt and its nut, but probably no need for the washer. Thin square M6 nuts are available on eBay and save a couple of mm. As you tighten the nut squash the plastic tube slightly so you can slide the plastic tube with the coach-bolt **inside** the steel tube. Then hacksaw or angle-grind the end off the bolt. If it's a loose fit slacken the nut slightly or apply some blobs of "No Nails" or similar builders adhesive (Toolstation 51064 £1.14) or even Poundland silicon sealer.



You now have a slim steel tube that will resist cutting for 20-30mins. The inner arm tube is a tad narrower but people have found that although they're snug they fit most people fine.

How the PRT cut "Greenpeace" tubes:- Instead of aiming for the central lockon rod or bolt itself they use a battery-powered portable drilling rig to cut 50mm wide holes in the middle. Then they use a wire hook to find your snaphook or chain, pull it up through the hole, then cut it with bolt-cutters.

This method was a surprise at first! But the logic for the PRT is it's a simple, safe, standardised procedure.



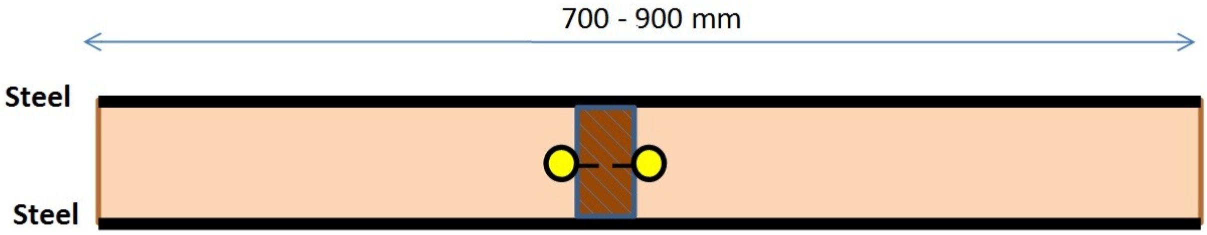
So …… here's some ideas to make this more difficult!

A. MODIFY THE BRACELETS: Find/buy some 20mm round black plastic electrical conduit pipe (Toolstation 47063 £1.10 2m) and cut into approx 80mm lengths. As you make your bracelets from the 4mm chain, after you've formed the loop for the wrist with the bicycle inner tube, pass the end of the chain through the pipe then attach the snaphook. You'll probably have to experiment with the length to get the snaphook to fit comfortably into your fingers/thumb. The snaphook may have to be disconnected to get the bracelet around your wrist then reconnected again, sorry this is fiddly! The idea of the pipe is there's less "slack" chain to be pulled up through the hole to be cut by the PRT (see right hand picture above).

B. MODIFY THE TUBE: Invent your own method for adding extra layers to the middle of the tube, such as carpet PVA & chicken wire, etc. If you're set up for applying "torch-on felt" (see Section 21 below) try cutting a wide strip and melting it like a swiss-roll around the middle of the tube covering the weld marks and maybe clogging up their drills.

C. then someone had this idea!!!!! ------>

11) Greenpeace tubes with central block

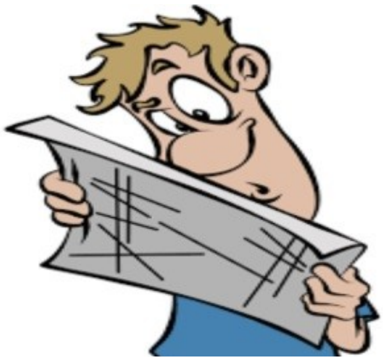


Weight – 5kg **Cost** – £10 **Cutting Time** – maybe a good 30 mins

This is based on the "central block" or "double-cut" designs in sections 13) and 14) below. The idea is to force the PRT to drill two access holes instead of the usual one, hence increasing the overall cutting time.

Decide on the length of your tube, maybe squeeze the standard 700mm tube with a slim 50mm central block. If you're making 900mm long tubes to be used in something like the Lego/U-Build boxes, see Section 35) below, use maybe a longer 200mm block.

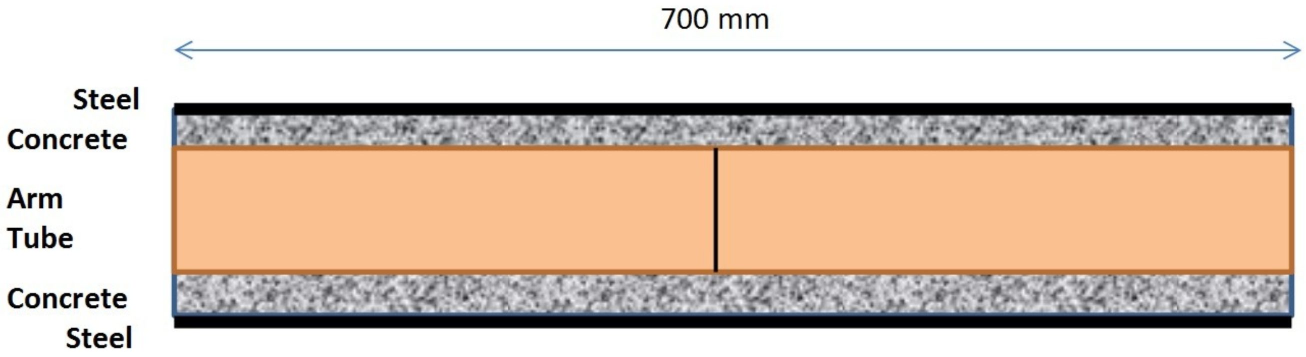
Making the **"central block"**. Find some square or rectangular wood blocks which will be a tight fit inside the tube. You could use some of the 75 x 75 mm rough-sawn square timber fence post mentioned in sections 13) & 14) but you may have to pack it out with wood battens or wedges. If too big sand/plane off some edges. Try to apply some "No Nails" type glue or silicon sealer in case the wood dries out and shrinks! Cut your blocks to the length you want. Fit each end with large "screw eyes" which the snaphooks will hook onto. Slide it inside the arm tube. If tight, hammer in with a length of batten.



"Screw-eye" are also known as "eye bolt" "lag eye" and "screw eyelet". They will screw into softwood easily, can be helped with a small pilot hole, or a tap with a hammer. You'll need a large size, usually given as 12ga x 55mm, for the snaphook to fix onto easily. They're a bit pricey bought over-the-counter, such as Screwfix pack of ten for £4.39 (code 17867). But if you hunt around on eBay you can get maybe fifty for maybe about a fiver. You could try a combined design including the plastic lining inside the steel tube if you share the view this helps protect the person inside

Apols for repetition/leap-frogging - it's to give complete instructions for each type of tube.

12) Steel/concrete lockon tube



Weight – 20-25kg **Cost** – £25 **Cutting Time** – about an hour

A. Some lucky people have a supply of scrap-yard steel tubes about 150mm wide (six inch) and about 3mm thick. They're about 970mm long, which is generously long. But to reduce the weight of the final lockon they cut them down to 700mm long using a hand-held angle grinder. For large numbers they use a bench-mounted metal-cutting chop-saw, or industrial cutting. This is the outer tube.

B. They cut 3m lengths of 110mm wide plastic tube into four ie about 750mm each (you'll see later why they're a tad longer later). Then drill a 7mm hole at 350mm from one end and fix the coach-bolt, then mark the other slightly longer end with tape – this is called the **TOP** end.

C. Next the plastic arm tube has to be positioned centrally in the steel tube. There's two methods:-
1) Cut thin carpet into about 25mm wide strips and about a metre long – just get a knife running along the weave and it slashes easily. Gaffer tape this to the BOTTOM end and wind it round three or four times until it's a snug fit into the outer steel tube – a bit of forcing in with a screwdriver helps. This "centralises" the plastic arm tube inside the steel outer tube.
2) A simpler method if making several is to cut up small blocks of wood about 20-25mm square. Use three of these to centralise the tube at the bottom, the plastic tube flexes a bit for a tight fit. They also work well at the top too – you may need to experiment to find what works for you.

D. Stand the tube on end, with the carpet wound end or blocks on the floor, and double check the TOP end is really at the top! You'll probably be making a batch of several at a time so line them up ready for the next stage. Standing them on a board or plastic sheeting works well – some cement and moisture will leak out the bottom but this is surprisingly minimal.

E. **CONCRETE** is by far the simplest and cheapest material to work with. Check your work-space – you'll be splashing concrete and water around and there'll be dust & noise from the mixing. Remember cement powder is nasty to breathe so a basic dust mask is worth considering. You and your clothes and footwear will probably get very mucky. You should be wearing builder's protective gloves, probably a workshop coat or a boiler suit. **BEWARE flicking wet cement into your eyes** - removal is a lengthy first-aid eye-bath job – always look away when tapping or stirring or consider eye protection.

F. You can buy "concrete aggregate" or "concrete ballast" in 25kg bags from most builders merchants (B&Q etc) for a few pounds. The names of everything is a bit variable so don't be afraid to ask. Concrete aggregate is usually described as "14mm to dust" meaning a mixture of large chippings, smaller gravel, sand, & dust. You'll also need a bag of cement for about a fiver – we recommend the plastic sacks as they're more resistant to damp. Standard concrete mix is about one unit of cement powder to six units of aggregate - measure using a small bucket, tin, plastic container etc, or if you're confident by the shovel-full or tip straight from the bags. You can use more cement, say one unit of cement to four units of aggregate, in the belief it's stronger. Standard aggregate is usually limestone which isn't particularly hard rock. It will do and its cheaper if that's easier for you.

G. Alternatively you can make a more abrasive mix using 20mm Cornish granite chippings which are usually only a few pounds per sack from garden centres, mix with builders sharp sand (cheap) in the ratio of about 2 to 2 plus 1 parts cement powder. You can also use 6/8mm Red granite gravel (used for decorative sparring/render) to fill narrow spaces but this is a little dearer. Other parts of the country will have their own local hard aggregate used for render finish or gardens. You can check the hardness online on various websites Mix your concrete in a pair of 40L "builders" flexi-tubs, either with a spade or better with a mixing paddle in a large power drill, or a power-mixer. A full-size cement mixer is great for very large scale production but is a chore to wash out properly after use.

H. Mix all the dry ingredients thoroughly, tipping from tub to tub, then add water until the mixture is like thick porridge. Pour your concrete carefully into each tube - this is definitely a two or even three person job! Keep tapping the tube with a rubber mallet or poking with a long steel rod to remove any voids. Make sure the inner tube remains central and a couple of wooden wedges, or three of the small blocks at the top definitely help. You'll appreciate the reason for leaving the inner plastic arm-tube slightly longer than the steel so the concrete doesn't slop down inside. You can make a sort of "cap" - simply make four slits up the sides of a spare length of soft plastic 110mm tube, so it pushes in and seals the arm tube. If you do get concrete in the wrong place simply remove it with a damp rag before it sets. Keep filling until the concrete reaches the top of the steel outer tube. Then move to the next tube.

I. The concrete will be set by the next day or so - remove the excess plastic arm-tube with an old saw or angle grinder. **JOB DONE!**

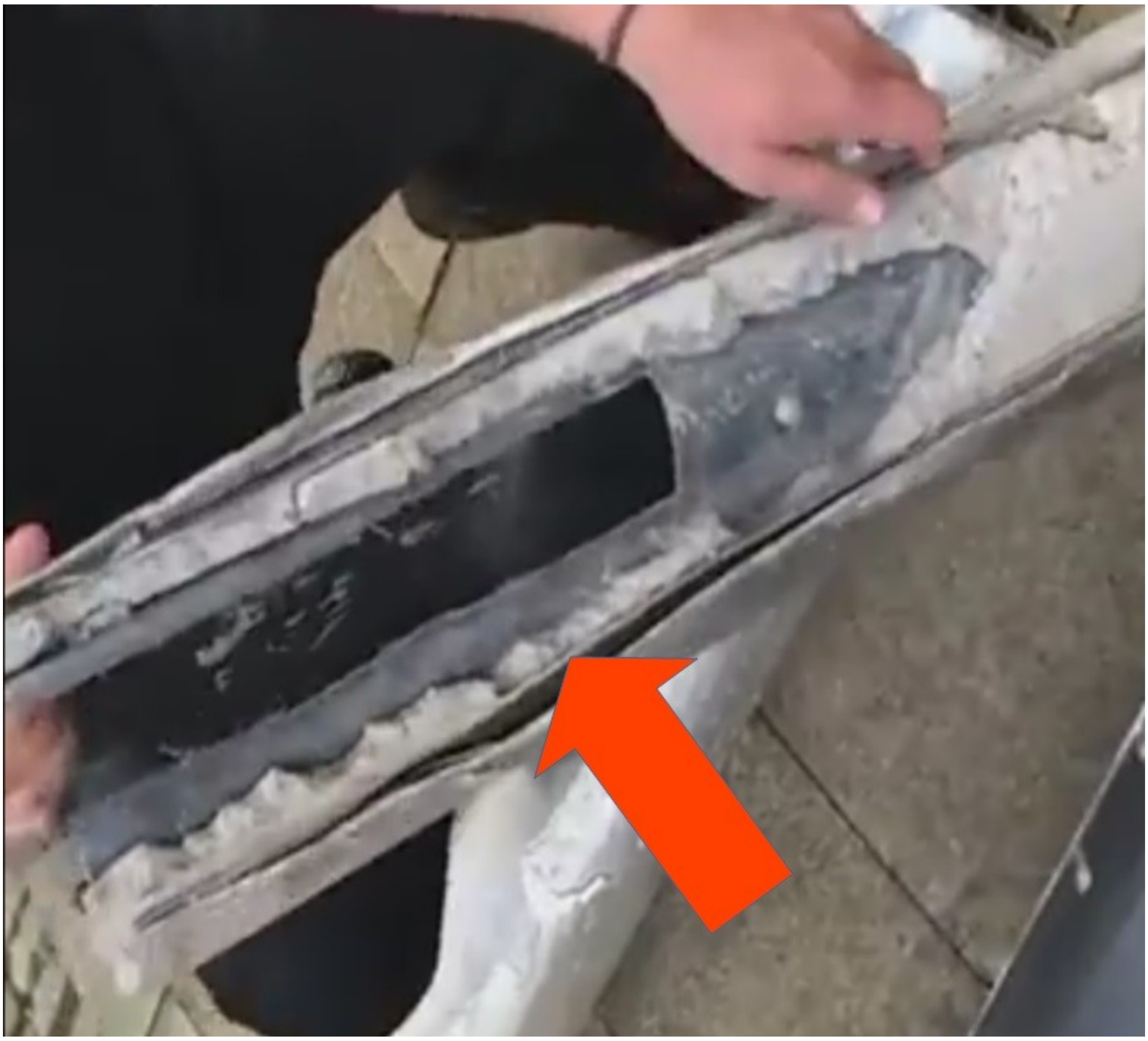
J. This filling process is what limits your production. If you're making just a few tubes you can scrape the mix in with a cement trowel, but it takes ages. Alternatively you can cut and shape a small hand shovel to the shape of the tube. Or you can bend some thin sheet metal into a sort of chute to get your mix where you need it. Some people make a special funnel to clip onto the outer steel tube which is quite a skilled job. But this makes filling soooo much easier and quicker so you can produce a dozen or more tubes in a day! You can speed the job up further by cutting the plastic inner tube to exactly the same length as the outer steel tube and keeping the top concentric with three more of the wooden blocks. But of course make sure your split tube/cap really must do its job. This saves you time later sawing the excesses off when the concrete has set.

K. **IT'S SAID CONCRETE TAKES A FULL MONTH TO ACHIEVE ITS FULL STRENGTH SO IT'S REALLY IMPORTANT TO PLAN AHEAD!**
Some people reduce this to a week but we wonder how the water evaporates from such a confined space???
When people are in a real hurry they have used "Postcrete" type products, normally used for fixing fence posts in the ground. They give a fast result setting hard in a few hours and drying out by the next day. They're generally not as strong as normal concrete mix, but if you action is happing tomorrow then they'll do.

L. The finished tubes weigh about 20-25kg which is as much as one person wants to carry far. Someone carried one in a shoulder bag riding a bicycle and dressed as a clown - but that's exceptional! A big tote-bag, sports holdall, or an IKEA 50p bag helps deployment. **These tubes take up to an hour to cut.** But this may tend to drop as PRT get more practised and................

…………and buy better equipment, particularly electrical generators and bigger angle grinders – people have seen them using a petrol-driven 9-inch/230mm blade cutter to remove the outer layers rapidly!

M. What if you can't find a supply of 150mm wide steel tube for the outer tube? That's tricky! To buy this new is probably too expensive. Cheaper is 160mm wide plastic tube (Toolstation 91400 £20.16). A 3m length cut into four is about right. Or you may be able to find metal spiral-wound duct pipe for about the same money (hunt around as the price seem to vary wildly for exactly the same product). Flip-top metal metal bins are often abandoned by rubbish bins and are roughly the right size. None of these will add significantly to the cutting time, they're just holding the concrete in place. You could make long wooden boxes (eg from sturdy plywood) and cast into these, triangular wood battens along the inner joins would strengthen and trim the weight. There may be other solutions so be prepared to innovate.



N. People have noticed the PRT often remove the concrete with a hammer and chisel and have wondered how it can be made more resistant? Some suggest adding **Chopped-Fibre** to make the concrete harder to break up. This is a standard practice in the building industry to stop concrete floor slabs cracking as they dry. A common product is "Bostik fibres for concrete" (Toolstation 69060 £3.98) but this can be difficult to "fluff-up" to separate the fibres, so try different brands. It might not make much difference but as it's cheap and easy it's worth a try.

O. **Chicken Wire** is a very good cheap bet to strengthen the concrete. It's more properly called "Galvanised Hexagonal Netting" available from Toolstation and most builders merchants in 25 and 50mm hole versions. Invent your own method of wrapping it around the plastic arm tubes maybe with gaffer tape at the bottom end, before inserting into the steel tube – if you leave the other end "long" you can "jiggle" it as you pour the concrete as it's really important not to jam the aggregate leaving voids.

P. To really strengthen the concrete you can add **Flexible Steel Mesh** which has sort of 10mm diamond shaped holes. Toolstation sell "**galvanised reinforcement coil**" for brick-laying in various widths from 63mm to 225mm (eg 50904 £11.48 100mm wide). Builders merchants sell "**expanded metal lathing**" in flat sheets used for cement render on walls and ceilings - 700mm by 2.4m (eg SELCO £15.06 Inc VAT). This is galvanised steel so will be quite strong. Aluminium mesh which is used in plastering is weaker but could be used if you can get it for free. Invent your own method of wrapping the mesh around the plastic tube perhaps fixing the bottom end with gaffer tape or then binding it loosely with wire. It's Important you agitate the concrete as you pour it by tapping the sides of the tubes. If you suspect voids are a problem try reducing the larger chippings, change to smaller chippings, or leave them out completely and use a mix of three parts "sharp" sand (fine gravel and sand) to one part cement.

Q. **MORE EXTRAS** – you can insert lengths of **rebar, steel rods or heavy-duty steel mesh** or maybe **"FlowForge"** into the concrete space - but don't over-do it or you'll weaken the concrete. You can bend sturdy metal mesh (say made from 1-2mm wire) into rolls to embed in the concrete layer- but people find this very time-consuming. **KEVLAR** has the reputation of a "*stop-all magic material*"! People buy it on eBay, they say it feels like a cotton tea-towel and you can also buy extra-sharp scissors for cutting it. Unfortunately people's experiments have proved disappointing! People have also recommend discarded tree-surgeons trousers - maybe fabric of that thickness could be effective, but you'd need a steady supply. There's rumours that some types of plastic pipe will melt when cut so resisting or jamming the angle grinder. People have tried blue "water main" pipe, which is probably polyethylene, but they report it cuts quite easily. Perhaps there are pipes made of other types of plastic but no one seems to know.

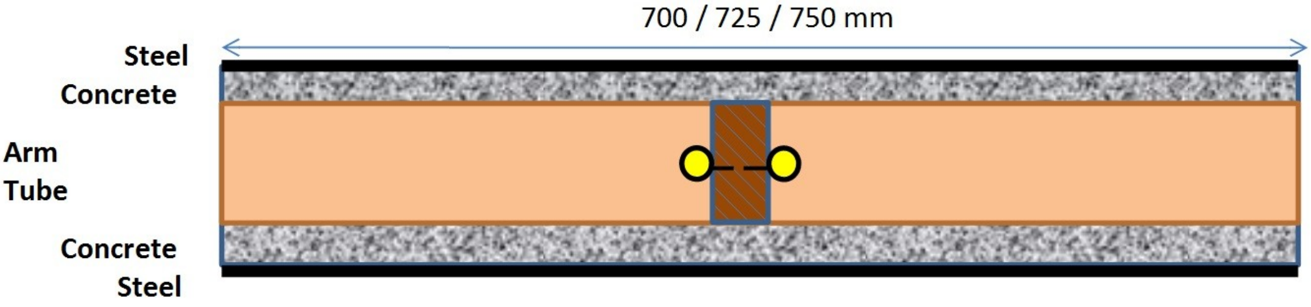
R. **INNER STEEL SLEEVE** – if you're buying 114.3mm wide steel tube (as above) you can take a 500mm length and split it along its length and slide it over the inner arm tube. It doesn't steal much space from the concrete layer but it could give the PRT more work to do. Alternatively, because angle grinding along the length of the steel tube is tedious, people cut and "snail-roll" the plastic arm tube instead – just remember to gaffer tape the seam to stop concrete seepage. **This extra could be really worthwhile!**

S. **EXTRA OUTER LAYERS** – Obviously you can add some of the extra layers mentioned above such as carpet etc. This might not add much, but do it if you have the time. A promising layer to add to the outside of the steel tube is "**Torch-On Roofing Felt**". This is a thick roll of bitumen fabric often coated on one side with sand or gravel. There's a wide range of products in Builders Merchants and specialist Roofing Suppliers and the differences aren't clear, maybe buy the best value for the thickness. A good start would be something like B&Q Roof pro Black Torch-on cap sheet (L)8m (W)1000mm at £43. Just make sure you're buying "torch-on" rather than standard "roofing felt" which must be glued-on with bitumen paint. You'll need a roofer's propane blow-torch (Toolstation 75686 £59.98 but about half that price on eBay), a supply of propane gas, and a bit of practice. Cut off a suitable length of felt with a craft-knife and tape it to the tube with Aluminium tape (Toolstation 81953 £6.76) which is reasonably heatproof. There's a thin layer of plastic cling-film on the felt that burns away with the heat. Play the torch flame to and fro along the join between the felt and the tube and as the bitumen melts have a buddy slowly roll the tube along with their foot (wearing tatty old sturdy boots). It's very easy to over-heat the felt so work gently. The idea is to roll the tube up in the felt like a swiss-roll with the bitumen melted evenly and sticking the layers together and to the steel tube. It's a good idea to lay out your work on a large sheet of scrap plywood as it can get a bit messy! People are still evaluating the benefit.

T. **PVA SURPRISE** – a trick developed by some groups is to apply an outer "skin" of tarp and gaffer tape. It's then filled with contents of a five-litre container of PVA glue. The PRT have to cut through this outer layer releasing the PVA. Whilst amusing this runs the risk of an extra change of criminal damage to the road and a substantial clean-up charge. There's also the risk of leakage in storage or on the way to an action. Possibly not a recommended design!

U. **Gloves, socks, etc** – Gloves are a comfort in cold weather. People wonder if maybe old socks with a hole at the toe could make the bracelet chain harder to reach? Some people have also suggested chain-mail! Battle re-enactment versions can be bought on eBay but are only aluminium and expensive. Maybe you could be the inventor of some innovative "piston" type arm device???

13) Steel/concrete lockon tube + central-block



Weight – 20-25kg **Cost** – £25 **Cutting Time** – about an hour +

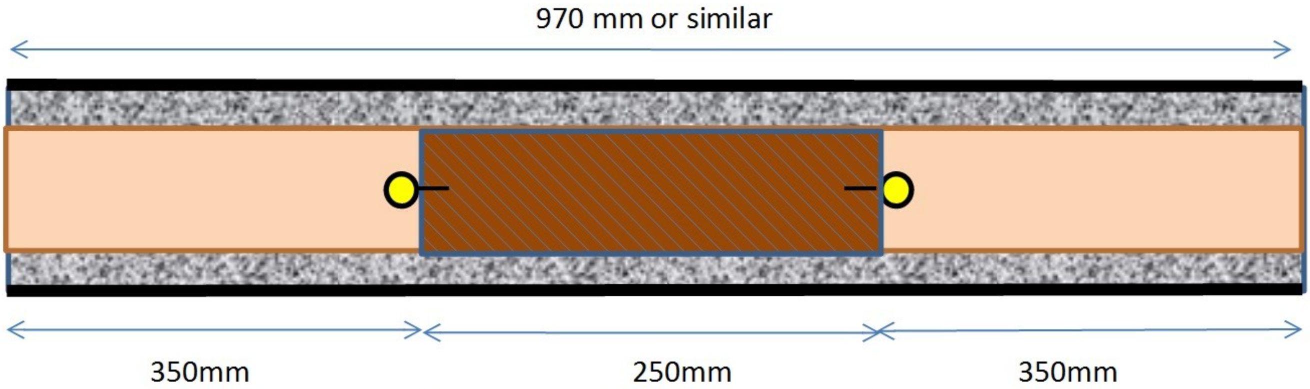
People have noticed PRTs quickly learn they don't need to cut the whole tube away. Instead they cut one end, release that person, then reach inside to open the snaphook, cut the bolt or the chain and the second person is released for virtually zero extra effort. So why not include a "central-block" - this divides the tube into two separate "compartments" forcing the PRT to do at least some extra work.

Cut your outer steel tube slightly longer at 725 / 750mm OR simply "squeeze" the 700mm design.

Now make your **"central block" -** 75 x 75 mm rough-sawn square timber fence post is a nice tight fit inside the 110mm plastic tube. This costs about £10 for 2.4m length. Cut a short 25-50mm length. Fit each side with 12g x 55mm screw-eyes for the snaphooks to hook onto. Slide it inside the arm tube. **If the block is a bit loose secure with screws through the plastic or use No-Nails glue.** More often you need to hammer it in with a length of batten. **Warning** - wood can shrink as it dries out so could work loose.

14) "Double-cut" steel/concrete lockon tube

It was mentioned earlier some people have a supply of steel tubes which are about 970mm long. So here's a design twist! A 700mm long tube seems satisfactory for people to lockon from either end, hence that's 350mm each. So instead of cutting the tube shorter why not make your tube with TWO lockon points??? You could use TWO coach-bolts, but the PRT might reach inside. **So try this…….**



Weight – 30-35kg **Cost** – £25 **Cutting Time** – about an hour and a half

A good design is to use a long "central block". Saw off about 250mm length of the 75 x 75 mm rough-sawn square timber fitted with 55mm screw-eyes at each end. Then slide/glue/screw/hammer it inside the arm tube. Check your sums so each person still has about 350mm of space to get their arm in.

SUCCESS – some of these "double-cut" tubes were used in the 2019 October Rebellion. The draw-back was the greater length & weight made deployment harder. BUT it was reported a PRT had to cut **TWO** windows taking more than 1.5 hours. They thought it so special they did selfies!!!

15) Mono-lockons

Some people who want to close a road/entrance for as long as possible use every arm available in their team - more arms in tubes means more cutting time! A large team can join all their arms in a circle. If deploying in a line then the spare arms at the ends can be used in any spare lockon tubes PROVIDED the snap-hooks can't be reached through the open end. Alternatively people have made **mono-lockon tubes** based on the designs above including a 50mm cap of concrete to close the ends.

16) Double-tube deployment

This is rare for reasons of comfort!

If there's just two people and they're really dedicated they can consider deployment using tubes on **BOTH** arms. This probably wouldn't be useful in camp situations as the PRT might simply leave you while they deal with easier lockons assuming eventually you'll self-release. It's not a comfortable position so your support/welfare team are vital.

Two women did this at the DESI Arms Fair protest in 2019, where the police were desperate to keep the roads open. Plus their hands were super-glued inside the tubes – it closed the road for the maximum time possible. **FULL-RESPECT!**

Just to mention the decision to use superglue **INSIDE** lockons is not to be taken lightly - obviously there's no possibility of self-release. Worth considering the PRT might be just finishing their shift or all the cells are full that night! It's only applicable when the Police are desperate to keep a road etc open and their resources aren't over-stretched.

Double tube deployment was also used by the "Heathrow 13" to gain maximum time during their blockade of the runway.

17) Large Suitcases

If transport across urban spaces and concealment are important you could consider suitcases. They are often available cheaply from charity shops or free abandoned by rubbish bins. The wheel-along type help cope with the weight of the tubes. Dress smart or like tourists and the cops will smile as you stroll by!

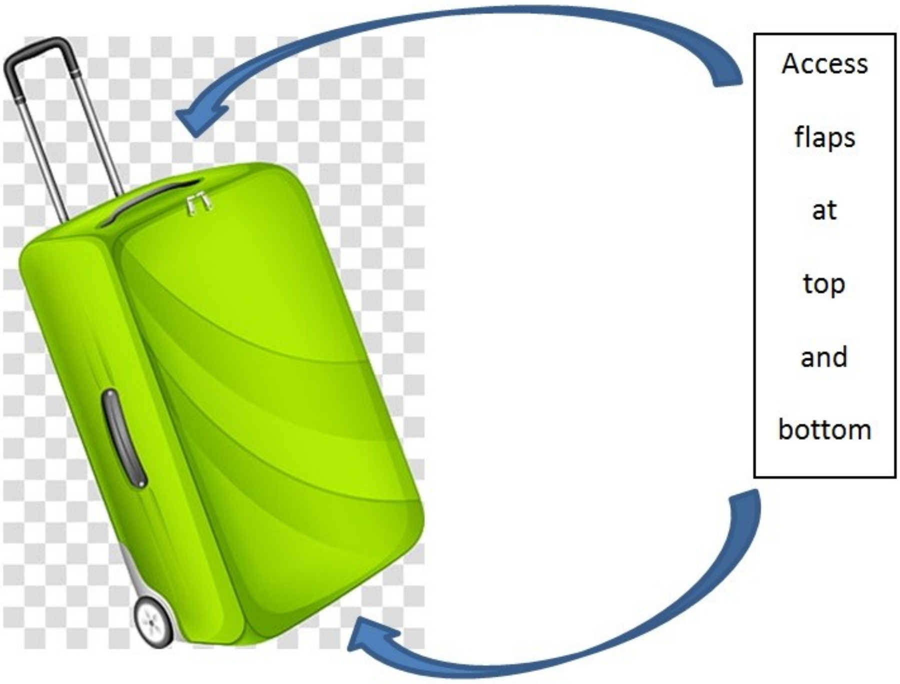
The simplest approach is to use the suitcase just to transport your lockons to your target. You'll need a few moments to flip open the suitcase and take out your tubes. If your target is un-guarded by police or security guards then you'll probably have enough time for a successful deployment.

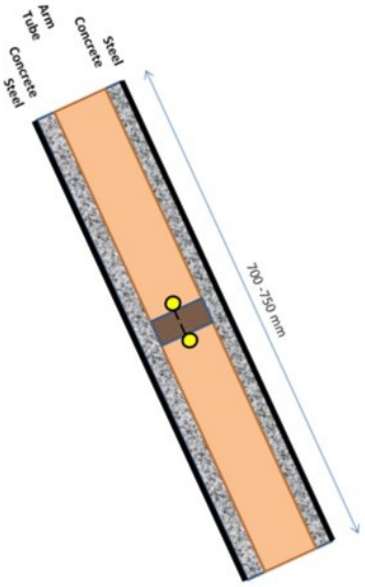
Alternatively, if timing is really crucial consider having the tubes "built in" to the suitcase with access holes for rapid deployment. **This is of course a lot more work.** Here's how people do it:-

Hard-shell type cases are fine for just transport but for concealment the holes you need to access the lockon tube are hard to disguise. Instead look out for the more common fabric style suitcases. The fabric can be slit to form a flap to cover the access holes, taping the cut edges or covering them with extra webbing works well enough. Self-adhesive velro or simply just gaffer tape can hold the flap closed long enough to get to your target undetected. Black is the choice colour as it's much easier to hide defects.

If you're checking abandoned suitcases make sure the zips actually work! They're too much of a chore to mend or sew - instead look out for another that will give you less work. Ditto the wheels. Don't bother if the wheels are broken, but often they're in surprisingly serviceable condition. Generally the "*wheel on a shaft*" type perform better than the "*castor*" swivel type which are prone to bend and snap off.

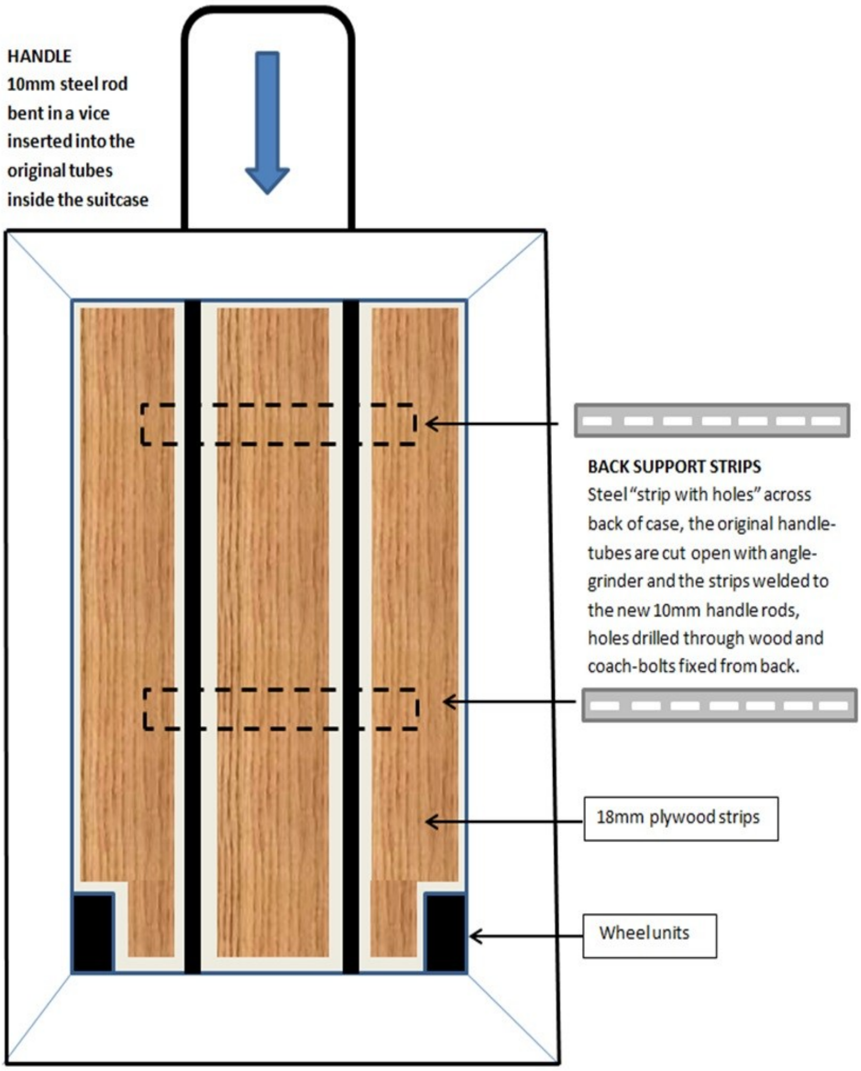
Large suitcases are usually long enough to hold a 700mm or similar made-to-measure straight lockon tube running from top to bottom. You can carry plastic or probably "Greenpeace" steel lockons without strain. But for a longer cutting time using the steel/concrete design the 20-25kg probably exceeds what the suitcase is designed to carry - the handles and body of the suitcase will need strengthening. So here's how people do it, but be prepared to be diligent **suitcase-ologist!**





Weight – 20-25kg **Cost** – £25+ **Cutting Time** – about an hour

Open the suitcase and cut away the fabric inside, they're surprising flimsy! You'll have to cut away the structure, often thin plywood or plastic and usually a metal strip, for your access holes to the tube. At the back/base you'll usually find a pair of metal tubes about 20mm wide running up the rear of the suitcase.


HANDLE
10mm steel rod
bent in a vice
inserted into the
original tubes
inside the suitcase
BACK SUPPORT STRIPS
Steel "strip with holes" across
back of case, the original handle-
tubes are cut open with angle-
grinder and the strips welded to
the new 10mm handle rods,
holes drilled through wood and
coach-bolts fixed from back.
18mm plywood strips
Wheel units

The handle is usually a U-type structure which telescopes into these tubes. Investigate the latching mechanism and detach the pull-out handles - they're usually very thin alloy tubes and simply not strong enough for your job. Invent your own handle buying some 10mm wide smooth steel rod and cut into 1.5m lengths. Bend it into a "U" so it slides down into the tubes in the back of the case. This can be done surprisingly neatly in a big vice.

Depending on the size/depth of your suitcase you may be able to cut a plywood panel to fit into the base of the suitcase. People recommend 18mm plywood and off-cuts are often available in skips. If space is tight cut strips to fill the gaps **between** the handle-tubes, and packed into **the sides of the case**, and crucially to **support the wheels**. Yes its complex but you can get surprisingly good at it!

Finally, with your angle-grinder cut into the original tubes in the back of the case, down to your new steel handle, then weld one or maybe two sturdy strips of steel across the case. Stiff 2-3mm thick steel strip with holes works best.

Fix half a dozen bolts through the back of the case, maybe with penny-washers, through the 18mm plywood and through the steel strips to hold everything together.

You could maybe strengthen the back of the suitcase with a thin 4-6mm plywood panel on the outside, painted black - this could blend quite well and look like a cool design.

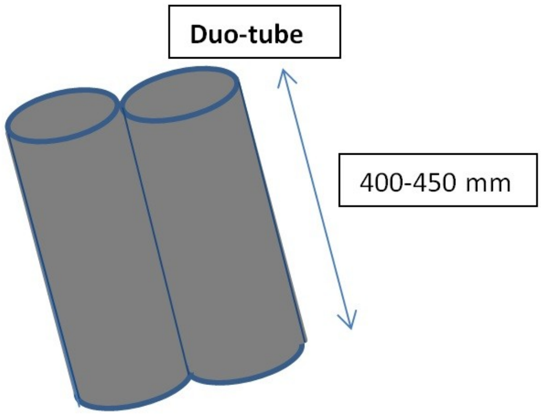
Finally fit your lockon tube. Stabilise it with wood battens screwed through the 18mm ply from the outside, and secure the tube using metal banding (Toolstation 60768 £6.91). Be aware of the lengths of your screws and don't let the points poke through the wood (**dragons teeth warning!**)

Cheap black spray paint (Poundland) covers all your work and damage on the outside of the case surprisingly well.

INTERESTING POINT – People have reported a PRT dismantling a suitcase lockon took an eternity undoing all the screws using a basic hand-screwdriver. They concluded the PRT wouldn't normally carry a power-driver, so they suggested using lots more bolts/screws with heads damaged or filled with araldite glue!

18) Small suitcases

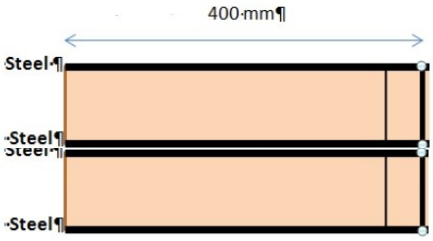
These can also be surprisingly useful and offer some remarkable advantages. This time you can use “twin tubes” or “duo-tubes” with filled ends. The steel outer tubes can be welded together, but this time with both arm holes facing out through the BOTTOM of the case. People have found they’re actually much easier to make - there’s only one access flap to work on instead of two, and being at the bottom of the suitcase are harder to spot. Plus no-one expects a lockon in something so small! The deployment needs practice, it’s slightly different and you lose some of the spread/width of the blockade. **But these have been successful with smart-looking people strolling past police lines and blocking a road in a line!!!**



Weight – 20kg **Cost** – £15 - 25+ **Cutting Time** – Up to one hour

How to make your “Duo-tube”. There are at least two designs.

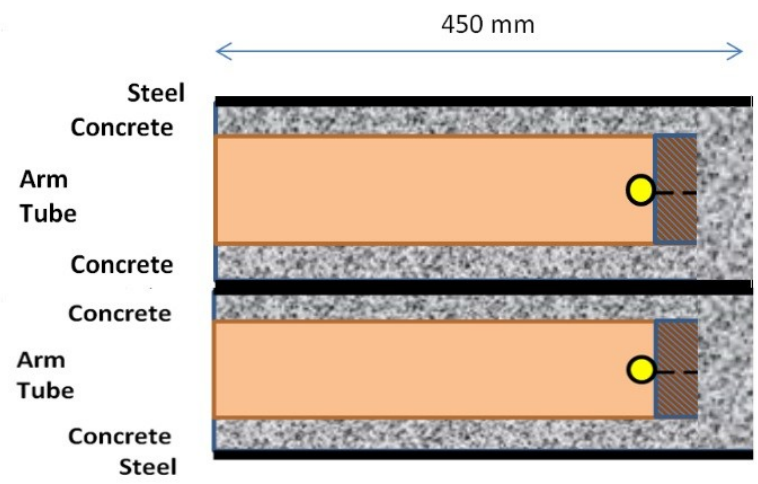
1) The simplest would be a “Greenpeace” type duo-tube. Take two lengths of your 114.3mm diameter steel tubes about 400mm long and weld them together at a few spots along their length. Fix the 3mm steel rod through each tube about 50mm from the ends. Then weld a plate over the end of each tube. You could also include the “snail-rolled” plastic inner tube idea. Fix some sort of baseboard into the suitcase as above and fix your duo- tubes in with battens and metal banding as above. As steel tubes aren’t especially heavy you might be able to manage with the original handles, but test the strength first as it’s sooo embarrassing for your kit to fall apart on the way to your action!



Steel Duo-tube

A pair of steel tubes should resist cutting for maybe 20-30 minutes each. But if you need more blockading time consider a Duo-steel/concrete tube

2) If you have 150mm steel tubes cut a pair them to about 450mm long. Cut a pair of plastic arm tubes to about 400mm long. Fix coachbolts 50mm from the ends then gaffer tape over the ends to keep the concrete out. Alternatively use the “75x75mm square fence post” methods with screw-eyes, again gaffer tape ends. Insert the arm-tubes into the steel tubes and use small wooden blocks to centralise them. Arrange the tubes side-by-side. It’s a bonus to weld the steel tubes together, but if you don’t have this kit people suggest using araldite or banding. Fill with concrete including the end-caps. Some people find extra-wide gaffer tape useful for sealing the ends (Toolstation Cloth Tape 72mm/3inch wide 13645 £5.07). The extra weight means you’ll probably need to strengthen the handles of the suitcase. Fix some sort of baseboard into the suitcase as above and fix your duo-tubes in with battens and metal banding as above.



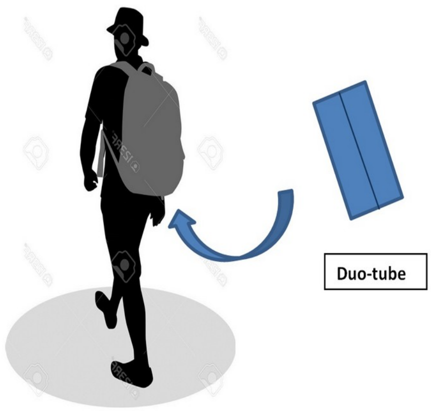
Steel – Concrete Duo-tube

19) Rucksacks

700mm long tubes can just about fit into large camping rucksacks. This trick was famously used at a mass die-in at an anti-fracking protest at Preston New Road in Blackpool. At the end of the die-in not everyone got up again!

As with the suitcases, if timing is of the essence then the lockon can be built into your rucksack and accessed rapidly through “flaps”. You’ll need a large “camping rucksack” otherwise your tube will poke out the top like a chimney which is a dead give-away! You’ll also need to add cushions, scrap foam, or other padding to plump out the sides of the rucksack.

An alternative design would be to use the duo-tubes as above. If you’re aiming to achieve the maximum span when locking across a road or entrance then one tube can point up and the other down. You’ll need access flaps at the bottom as well as the top of the rucksacks of course.

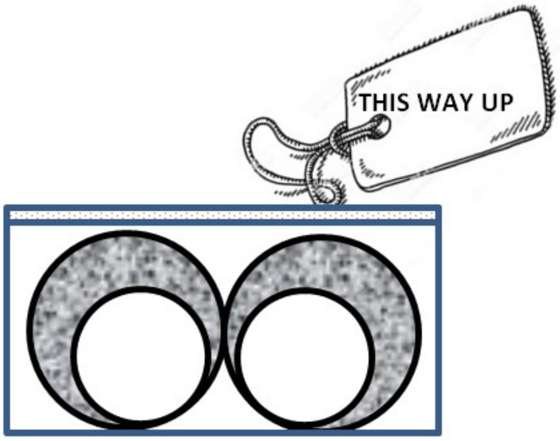


People have also made a variation of the duo-tubes in a box containing twin-opposed tubes protected with metal mesh and bitumen (see below). These were excellent concealment and quite effective lockons taking 30-60 minutes to cut. Apparently they were damn heavy to carry, but do-able.

People have experimented making very short tubes which were carried inside small day-sacks. **Yes it can be done!** These required special cuffs made out of empty food tins cut and taped around people’s wrists! They were a huge amount of work and would only be worthwhile for special assignments.

People dream of making shorter tubes by finding an arrangement where the arms cross over or pass each other inside the tube with some sort of off-set attachment points. The problem is to be able to build this from standard commonly available parts - oval or specially shaped tubes are hard to find or make. No one seems to have come up with a satisfactory design yet.

With suitcases, rucksacks and other kinds of luggage there’ll probably be empty spaces around your tubes begging to be filled. People have used “spray-foam” (Toolstation Fix & Fill 27912 £4.83). It’s great fun and expands enormously to fill voids, layering it with carpet or blankets proves tedious for the PRT to cut through. However it’s pricey, once the can is started it all has to be used in one go, it’s hard to judge the expansion, can be very messy on hands and clothes, and crucially can ooze out unexpectedly through seams and openings. Alternatively, people recommend generous applications of cheap and more versatile PVA glue (Toolstation 18844 £9.48) to fix carpet, blankets and especially foam from abandoned furniture.



Biased tubes – If you make sure your suitcase or rucksack is laid down a particular way - with the "back" upwards is recommended so the PRT has to cut through the handles, straps and baseboard, then the arm tubes can be arranged off centre so more of concrete is on the top and the sides to resist the cutting. This will affect where the access flaps are positioned by about 20mm so check this isn't a problem with the zips etc.

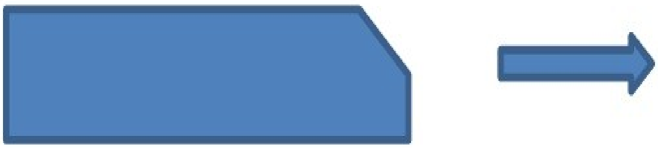
The only problem with a biased tube is forgetting which way is "UP"! So its good to use a very obvious label - **which must of course be removed just before the action!**

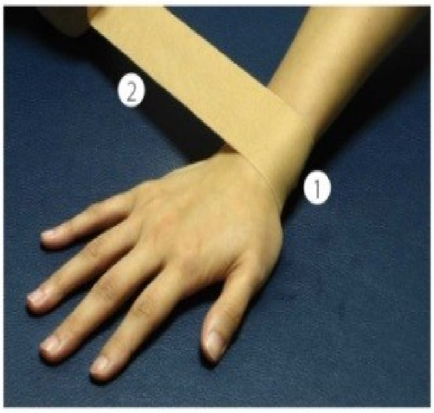
People confess that suitcases and rucksacks are a deal of work, maybe a day or more for EACH ONE! So they're only worth-while when concealment is really really necessary.

Other types of bulky luggage are also worth considering. People have used large musical instrument cases, bongo drums, golf club bags, tubular document cases, a tea urn, and even fake sound-system speakers! Lockons have also been hidden inside angel's wings, a giant peace symbol, and even a giant teddy bear! [8]

20) Using cuffs

In the past there were rumours of PRTs using endoscopes with a cutting or burning tool to reach the bracelet. This may not be current practice due to obvious H&S concerns. Nevertheless a wire hook or a slim officer's hand are possibilities. Cuffs are essential when using very short tubes, could be useful for all lockon tubes, but regrettably difficult to organise for large groups and in hectic situations.





If you need cuffs you can use carpet-underlay available from skips behind your local friendly carpet warehouse - the smoother plastic type rather than the softer foam "crumb" stuff works best. Cut into strips about 400mm long and 100mm wide but with a corner cut off at an angle. Wind these around the blockader's wrist, the tapered end compensates for their tapering wrist. Check for a good sliding fit into the 110mm wide tube, trim the excess off and fix with gaffer tape. This tends to be a time-consuming individual-fitting process and only works in a dedicated affinity group. A simpler alternative might be to use a "Wilko large hair donut" (£1 each) which are not too tight on the wrist, but these haven't been tested in action.

21) Tar/Bitumen

People suggest Tar/Bitumen as a promising material to fill lockon tubes. The idea is cutting tools like angle grinder blades get stuck in the bitumen and clog-up.

People have tried roofing "felt" painted liberally with liquid bitumen "paints" and rolled up like a Swiss-roll, but they say the results were disappointing. TIt doesn't dry/harden/set as the solvents can't escape. There may be a method of hardening bitumen paint with white spirit but no-one can confirm this.

If you have a large propane "burner", about 10kW, as used in camp kitchens, you can melt and cast bitumen in place of concrete in the tubes described above. It can be bought in 20-40kg blocks or kegs (see eBay). It's often called "oxidised bitumen". It's not cheap! Don't bother with "asphalt", which although much cheaper, is bitumen mixed with sand/gravel and doesn't resist cutting so well. Break up your keg of bitumen into fist-sized lumps using an axe, rather like splitting logs. Melt it in a metal bucket – made by cutting the top off a 25litre cooking oil drum (but leave the rim intact for support). It's quite slow to melt so stir it from time to time to prevent over-heating. It melts at about 150°C so use all the obvious safety precautions like tough boots, thick trousers, leather gloves, and eye-protection etc. It's better to use a carpet seal for your lockon tube and stand it in a bucket with an inch of water to stop leaks. Avoid the temptation to melt large batches at a time or to let the bitumen get too hot or it will **melt the inner plastic tube, wrecking your efforts**! Possibly brown tube is more heat-resistant than black tube. You can try packing the space between the inner and outer tubes with rebar, steel tubes, angle, or incorporate chicken wire or an inner steel sleeve to make the cutting process more challenging.

If making "duo-tubes" in a box filled with steel mesh and bitumen you'll need to seal all the cracks, otherwise you'll get a nasty black puddle on the floor. People cut wooden discs to fit the tubes using a large hole cutter, or something similar on a bandsaw. "**Fire Mate**" intumescent acrylic sealant can be used to seal gaps (Toolstation 58145 about £3 per tube) and left to dry over night works very well.

People's experience with bitumen is insufficient to say if it justifies the extra time/work/expense involved. Maybe a 20mm thickness, as in the tubes described above, is no harder to cut than concrete. People have yet to investigate if a greater thickness, again containing steel, might be more successful?

If you decided to specialise in this material then purpose-made bitumen melting devices may be available cheaply, or even free, as the use of bitumen for roofing is being replaced with fibre-glass materials.

……..a Canadian campaign using an intriguing lockon tube as a great media photo-opportunity !

22) Vehicle Lockons

People say the simplest method is to put a lockon tube in the rear foot-well or on the back seat of a four-door car. Arrive, the people jump out and lockon - the road is well blocked! Four-door cars work well as the open rear doors make good back-rests for the blockaders. Alternatively people have used chairs with the legs cut off for back support.

A saloon car is preferable to a hatchback as it usually has some sort of bulkhead or restricted access from the boot to the rear seat which makes access for the PRT more difficult. You can also weld the boot etc closed to gain a bit more time.

People have used two-door vehicles when deployment speed isn't crucial. The lockon tube has to be moved from say the boot or back seat to the front seat or front foot well. An alternative is cut holes in the rear walls of the car or van, covered neatly with tape etc, to give arm access to an installed lockon.

Surprisingly the tubes don't have to be the width of the car. People have found a 700mm lockon tube works well in a compact car because the blockaders are effectively reaching INTO the car. If the car has a raised "bump" down the middle (for the prop shaft on rear-drive cars) use blocks under the tube.

To state the obvious, at least one blockader's bum must be on the ground, or the Police have been known to simply drive the vehicle out of the road with the people still locked-on inside!

As the car is providing the transport a much more substantial tube can be used. Consider the "Double-Cut" tube (above). If you have time, you can also concrete your tube INTO the footwell. But remember the "one month rule". People ponder if fibreglass resin could be a quick fix method if the surfaces are well prepared. But if you fix your tubes into the car it's difficult to resell if you don't go ahead with your action!

Keep an eye on your scrapyard for some "7-8 inch" steel tubes, often used for water mains pipes and pile-driving for foundations. They're often made of 10mm thick steel! Simply insert your standard lockon tube inside and secure with wooden wedges hammered in from both ends and broken off. The whole tube weighs 30-40kg and will need two people to lift safely. They take two hours plus of cutting even with the best equipped PRTs. Worth considering your comfort and maybe taking a good book?

If you have the time and resources consider the "biased" tube arrangement as above provided the tube can't be rolled over. Given time and skill very substantial lockons can be made taking many many hours to cut, hence justifying the cost of the vehicle. Convert from the volume of your concrete to calculate the weight and check the VIN **V**ehicle **I**dentification **N**umber plate. Build a rebar cage with steel rods at 50mm spacing to make breaking up the block with a jack-hammer as tough as possible. Some people have attempted more complex designs with a third person locked-on and lying ontop of the tube, their body making access to the lockon tube even more difficult for the PRT. There's obviously potential for massive and more innovative designs here.

ALWAYS check the VIN plate for how much luggage weight the car is designed to carry in addition to the passengers. Look up how to interpret the numbers. **It's unwise to exceed the luggage weight limit!** Police have been known to take a car with a built-in lockon to a weigh-bridge to check!

A really important trick was discovered by accident when a car lockon was designed with a bent tube from inside the car, through the back seat, and emerging underneath the car like an extra exhaust pipe.

People guess there's a safety rule about using power tools **NEAR THE PETROL TANK** **(but not diesel)**. This held a PRT back for most of a day until they found gaps in the welds to hook and cut the wristbands. It doesn't seem to apply to a tube in the rear foot-well, maybe because it's "inside" the car. Obviously extreme care must be taken working on the car and fitting such tubes - **particularly avoiding cutting tools and welding anywhere near the petrol tank**. Obviously the advice of an experienced car mechanic is paramount. The tubes can be welded away from the car and any holes or fixings done with hand-tools. The PRT would presumably have to call an automotive mechanic to drain and remove the petrol tank before they could even start cutting the tubes!

Vehicles also give the opportunity of transporting extra equipment to make use of height. A good example of this was the "**Stop-the-Start**" action at Preston New Road where an impressive banner/structure complete with lockons was erected onto the roof of a van. **[17]**

It's surprising more people don't use lockon tubes **UNDER** their own vehicle as the restricted head-room would make cutting extremely difficult.

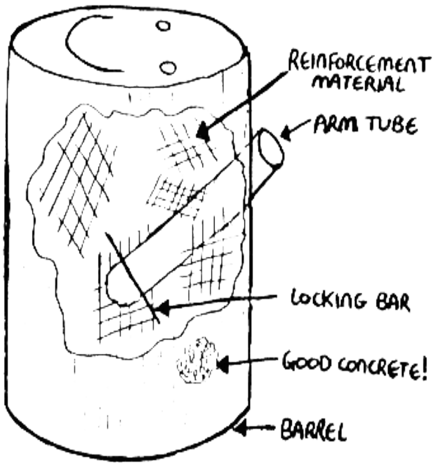
Some people slash their own tyres on arrival. But this gets awkward if the police offer you a deal to leave. So simply deflating tyres is a good half-way house.

For obvious reasons **DON'T** use a hire vehicle as you can be charged massively for any damage or for even getting it dirty. A reasonable "runner" can be bought for about £300. It should be fully legal ie MoT, Road Tax, etc and the driver must be insured. This is complex but doable! The owner (who may not be the driver on the action) doesn't seem to get chased. The vehicle will generally be seized and kept for "evidence". If you've blocked a road on private land the land-owner will have similar powers to remove and impound the vehicle. They're usually released unpredictably days or even weeks later, the vehicle can then attract rapidly mounting storage charges - this is tricky for an action done far from home. The solution is to pre-arrange with a local scrapyard to collect the car promptly! On occasions the Police have been known to stick a parking ticket on the vehicle during the action before they can legally touch it. **Get the details/numbers and pay the fine at once**. There was once a case where six people got off from an action as there's a legal clause about not getting punished twice for the same offence!

Protesters have used probably every known wheeled device from caravans to bikes, and of course boats!

23) Barrel lockons and massive tubes

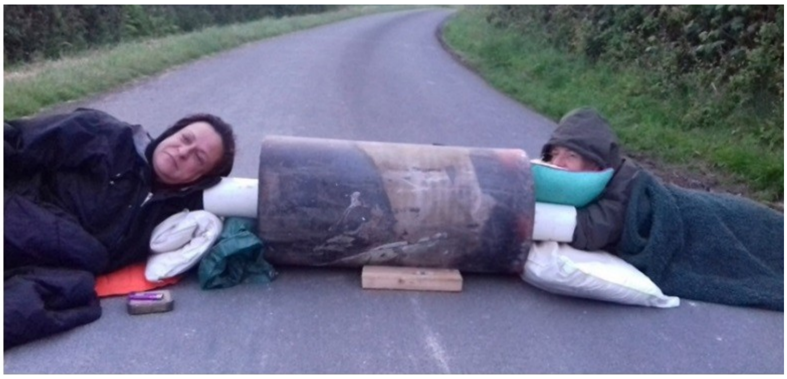
Generally, the bigger and thicker you can build your lockon, the longer it will take to cut. In some cases they can deter the PRT completely who may wait for you to eventually self-release when your energy or welfare resources run out.



There's also scope for more squat designs with horizontal tubes, which would weigh a lot less and be much easier to transport, if people don't mind lying on the ground.

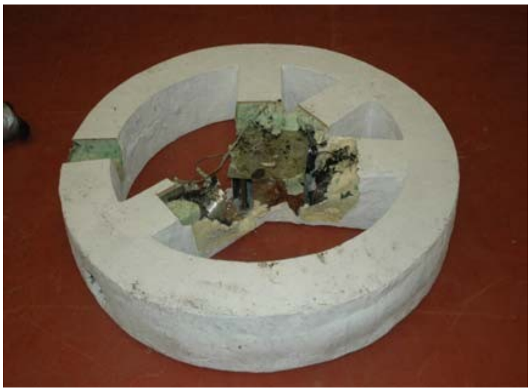
Barrels or tyres filled with concrete have obvious advantages for rolling a massive lockon tube to an action and can avoid the legal issues of using of a vehicle. **[18]** & **[19]**

People ponder that if transport issues in urban areas could be solved, perhaps by subterfuge, massive concrete lockons could defeat the PRT current use of battery powered cutting tools?



24) The "substitution/bluff" deployment

Worth considering if your target is heavily policed but you have the support of a capable art team. During the Faslane-365 protest at the nuclear submarine base in Scotland, one day a procession appeared headed by people carrying a giant peace symbol. The symbol was paraded around, held up for photo-opportunities in front of the gates, danced around, put down on the ground, played music to, etc etc. Needless to say the police were all over it, tapping it and inspecting it for hidden lockons. None could be found. The morning wore on and people got tired and went away for lunch and rest. The procession reappeared in the afternoon, still carrying the giant peace symbol. The symbol was paraded around, held up for photo-opportunities in front of the gates, danced around, put down on the ground, played music to, etc. Then people punched their arms in through paper windows and locked onto tubes hidden inside.

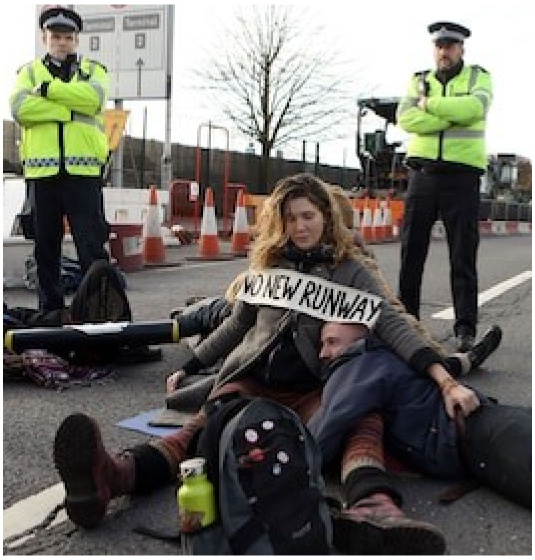


How???

Answer - there were TWO **identical** giant peace symbols, the innocent one for the morning and the not-so- innocent one for the afternoon! **[20]**

25) D-Locks

Ever since they appeared on the cycling scene people noticed D-locks were a perfect fit for the human neck. They can be used to lock to some types of door-handles or similar structures, or industrial machinery. They're compact & light to carry, they're fairly swift to deploy, and they're very photogenic! **[21]**



In the absence of something to lock to, two people can sit back-to-back and D-lock their necks together. Bring a trusted friend to look after the keys! Sometimes a third D-lock makes the deployment easier. **[22]** You don't have to be reminded that safety is really important?

Basic models are cheaply available from high-street shops or online. D-locks are fairly straight-forward for the PRT to remove using pneumatic bolt cutters. We haven't heard if high cost models £50+ with especially hardened steel are more durable?

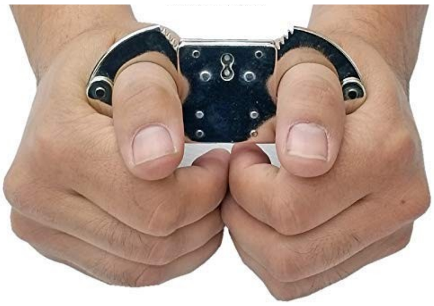
26) Chains

Chains have a long history, first used by the Suffragettes to attach themselves to railings while making speeches in the street. Almost any chain, from flimsy to sturdy, even plastic chain will do - they'll all need the services of the PRT. If you have plenty of time to deploy then one long length of chain, in a figure of eight, possibly even with a knot, and secured with a padlock will do the job. Just check the padlock is large enough to close on the number of layers of chain involved. If deployment time is likely to be tight then a good arrangement is **TWO** lengths of chain and padlocks. One already attached snugly round the person's waist and padlocked. The second looped through the first chain and ready to pass through the railings, or whatever your target is, or around your buddy and secured with a second padlock. More complex arrangements are possible. Basic chain 4 or 5mm thick is available from Toolstation etc. Very sturdy chain is available free if you have time for urban-harvesting. Motorists who get bright yellow immobilising triangles clamped to their wheel when they've not paid their road-tax, sometimes manage to remove them and abandon them on the road-side. You'll need an angle grinder to separate the chain from the triangle. Big "shutter" padlocks are on the internet very cheaply (about £5), the biggest sizes will be big enough to accommodate two layers of your chain chain.

Be aware that any chain is fairly straight-forward for PRT to remove using pneumatic bolt cutters.

Chains also have a powerful photogenic and symbolic value. Consider carefully how your image will appear in the local media. If you're defending say, a tree, people will understand your protest better if a couple of protesters chain themselves to the tree rather maybe than lie down in lockons.

27) Thumb-locks



Thumb-locks resemble miniature handcuffs, but for thumbs. They range from key-ring versions which are quite cheap but have a joining chain which would cut easily if accessible. **[23]**
Through to more solid all-in-one-piece versions
People sometimes glue over the key-hole or mechanism. **[24]** Once locked they can only be cut off- so take care practising! They're highly portable and easy to deploy. People have used them to link their arms around inaccessible parts of vehicles such as the chassis, wheels, the prop-shaft, etc. Some practice and familiarisation with the underneath of trucks & vans would be useful. People say they're really tricky to remove. **As with all vehicle actions the safety role of your support team is paramount.**

28) Super-Glue

Superglue came into popular use with Extinction Rebellion. It's cheap, widely available, highly portable, requires little training, and is very easy to deploy. The hand-on-the-glass-window has become an iconic image as well as the "do not remove" label or the note explaining the cause. It's probably worth paying a little more to buy the 10ml or 20ml bottles rather than fiddly tiny tubes. Be aware that if the glue damages the property there may be additional charges for criminal damage. Your buddies and welfare team must be ready to protect you should the cops/security go crazy and start dragging people around while still glued-on. The PRT use a releaser/de-bonder fluid which works fairly fast and seems to leave people's hands in good condition. It is worth equipping your welfare team with de-bonder too, available from good hardware stores, in case someone needs to release in an emergency. People say nail-varnish-remover also works, alternatively a bowl of warm soapy water if you can get it works after about ten minutes of immersion.

29) Wheelchairs

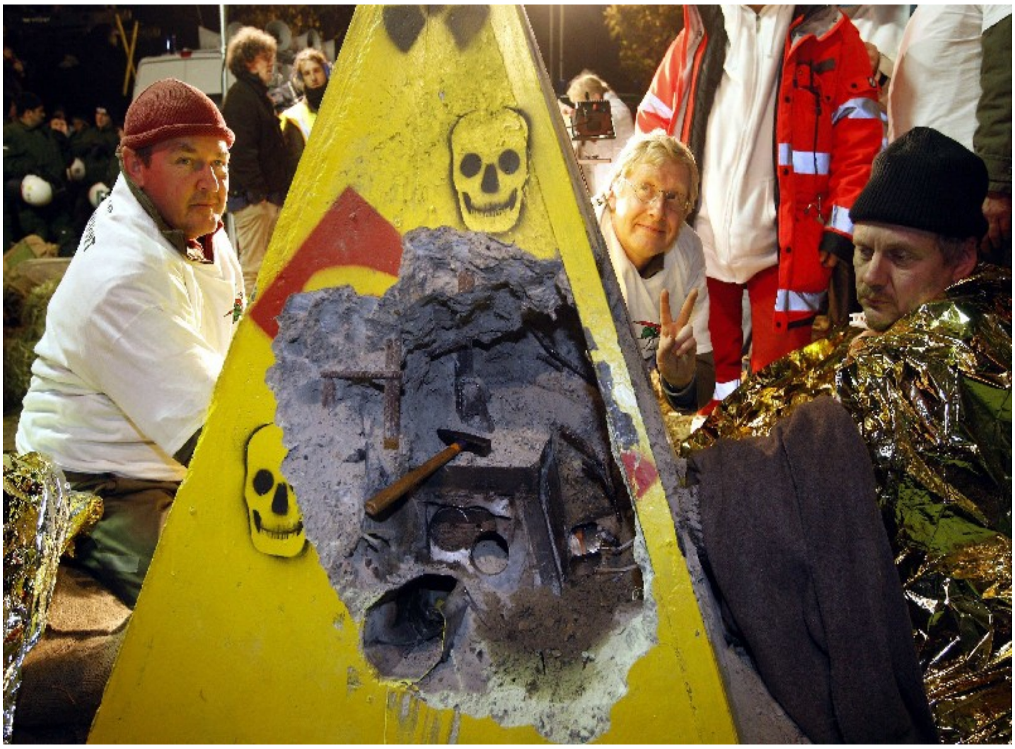
Wheelchairs open up new possibilities of approaching a target undetected. Quite a lot can be hidden in (black) bags etc underneath the seat if some sort of platform or shelf is fitted, then taken out for the action. Alternatively lockon tubes or other device can be fitted directly under the seat and used in-situ. Clearly the action is more authentic if those involved are elderly or people with disabilities.

30) Un-cut-able lockons?

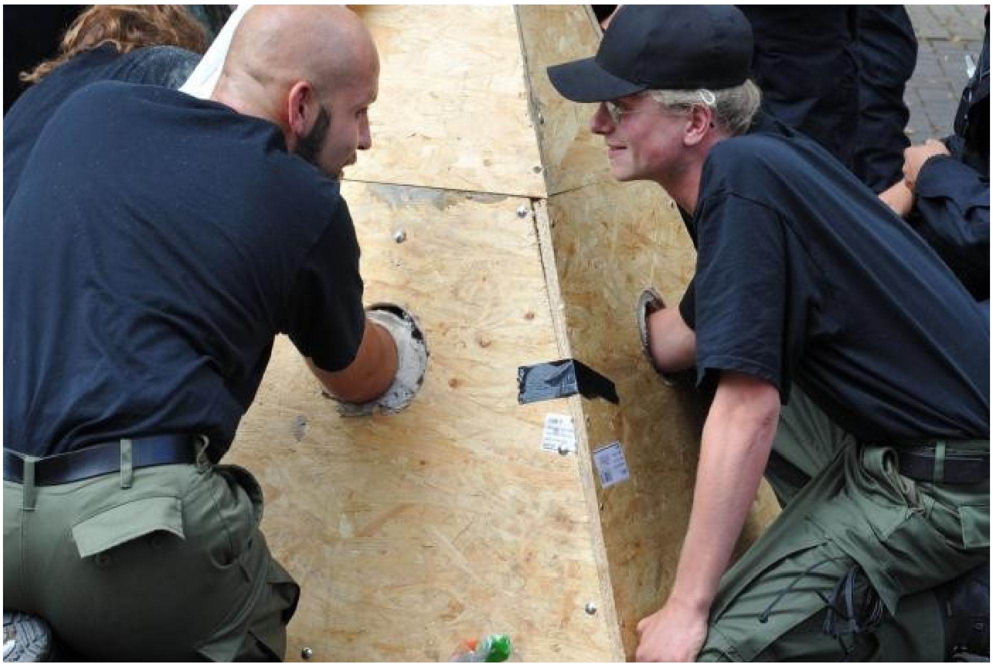
Some people dream of a magic material that's impossible to cut! Titanium or other exotic materials might be worth considering if you have mates in such industries. Thick toughened-glass tubes are sometimes mentioned and might be worth investigating?

Some people get fixated about "rollers". These could work like the "barrels" in the bolt part of a mortice lock which defeat sawing. Metal tubes containing greased steel rebar could be embedded in the concrete in the hope these would spin defeating the action of the angle-grinder disk. More sophisticated versions could be made cutting the bearings from bike pedals and using them to support a metal tube eg 20mm steel conduit pipe…

……………. inside an outer 30-40mm pipe. But people reckon these would be time-consuming to make and guess they would be easily defeated by the PRT using a crowbar or chisel jamming their rotation.



Perhaps the most un-cutable lockons were the “concrete pyramids” officially called “Betonpramide”. These were used during the CASTOR anti-nuclear train protests in Germany in the 1990s. They resemble a large version of a “trig point” found on UK hilltops - large four-sided concrete pyramids. These were placed on the railway lines where the nuclear waste trains passed and four people inserted their arms through holes in the sides. They appear to be made of a steel structure containing thick concrete. They were presumably a considerable effort to transport and for a team to carry into place. The genius idea which made them “unmovable” was people’s arms passed through holes in the pyramid and were clipped-onto a hanging weight or pendulum inside, thus making it impossible for the PRT to move them off the tracks. We assume the risk of breaking people’s arms was well communicated and respected. These are the only photographs people know of, plus a news report in German from 2011. **[25]**



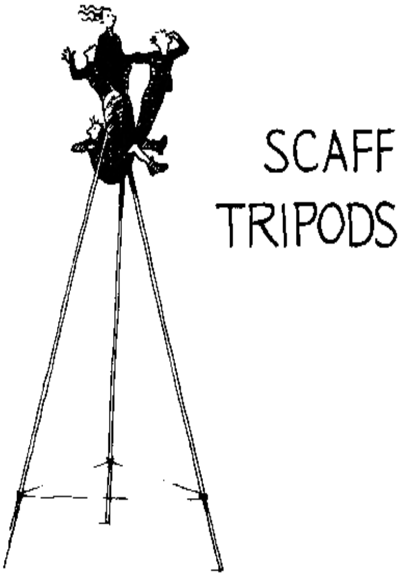
Until it can be confirmed, people work on the assumption that nothing is un-cutable. The task is to develop good designs, and balance time & cost.

The idea of the “concrete pyramids” does suggest the idea that if enough people could sit round and on a central lockon their bodies could make it difficult for the PRT to reach the lockon?

Another idea is to have people sitting in a row and their tubes supported inside boxes **[26]**. To reach the lockon tubes the PRT have to cut into the boxes hence weakening them and risking collapse. People call this the use of the “**precariousness**” principle which obviously has to be used with great care.

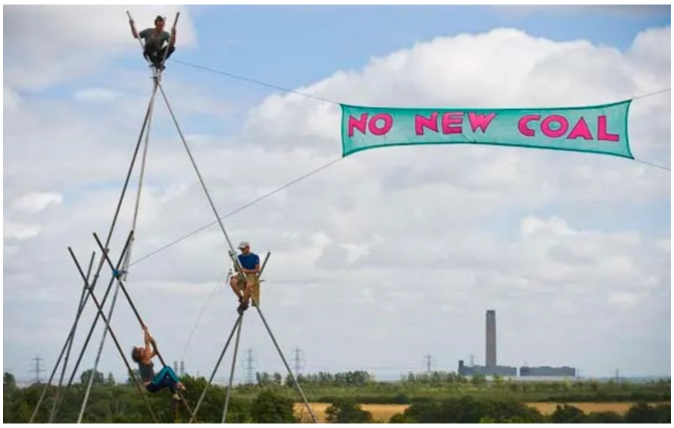
People have also toyed with the idea of people locked-on at height with their arm-tubes incorporated into the structure. Ditto the use of people in “**synergy**” ie someone on the top of a structure and someone at the base – neither can be worked on easily for fear of endangering the other?

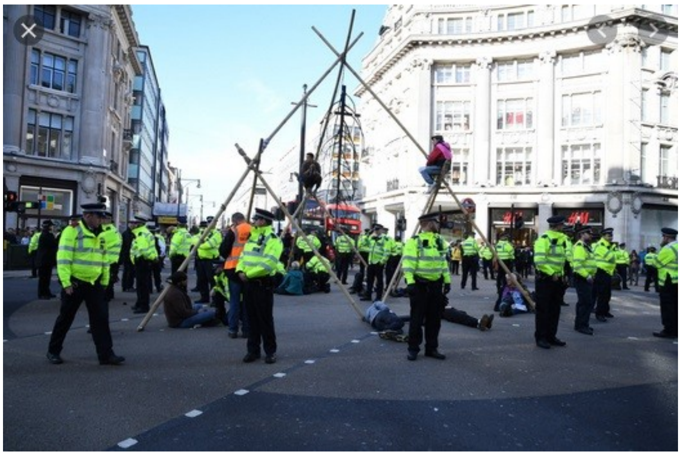
31) Other blockading techniques



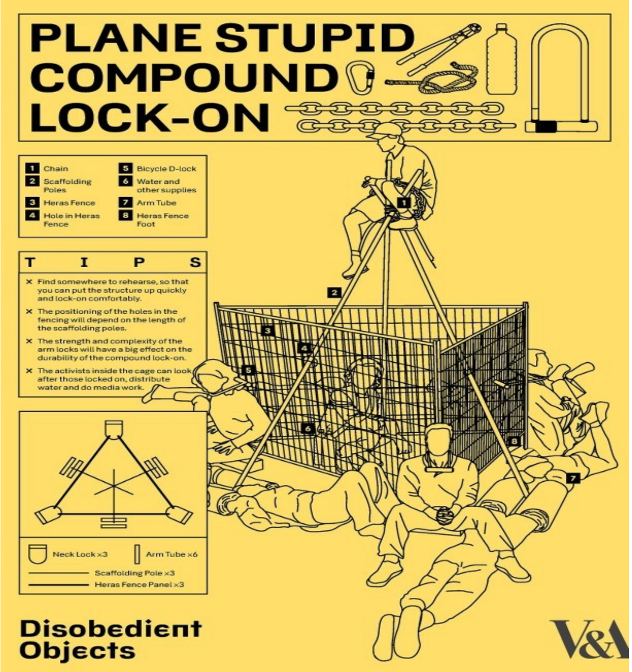
This guide has covered primarily smaller portable arm tubes. People have mentioned “foot-lockons” but can’t produce more info. But there are many other blockading devices from tripods to sleeping-dragons which can be researched online. Be aware of language differences eg American Lockon tubes are all called sleeping-dragons or lock-boxes!

Tripods are traditionally made from steel scaffolding tubes with height ranging from three to seven metres. Lighter aluminium and bamboo versions are available when they have to be carried some distance. Don’t forget the all-important joining-rope linking the bottoms of the legs. **There must be a team-member guarding each leg at ALL TIMES to deter saboteurs – yes it has happened with serious consequences!** A rugby ball squashed into the triangle of the top tubes provides an instant cushion, sling/hammock seats or even an adapted chair can provide more comfort and endurance. Worth considering a safety harness for really long stints. A simple lockon fitting to one of the top tubes could be a possibility. A ladder or climbing blocks fixed to the legs work very well for the less nimble. It’s wise to get training and advice from experienced users. Tripods have also become an art-form in their own right such as the “double-decker” first used at Climate Camp at Kings North in the 2000s **[27]** and in Oxford Circus in the 2019 October Rebellion. **[28]**



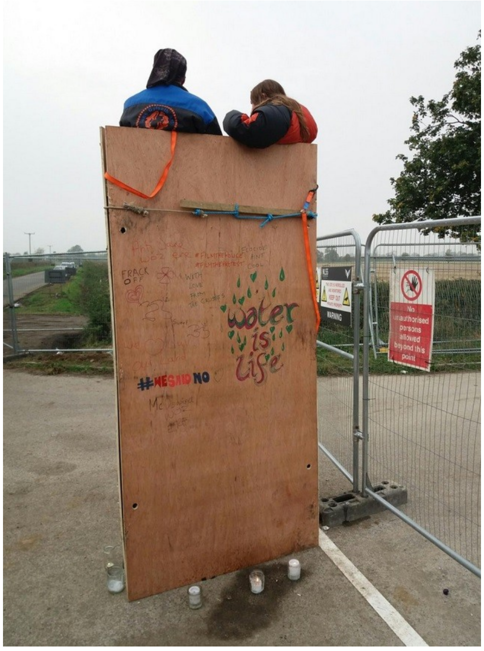


Perhaps the record for the least-tall tripod goes to Black Lives Matters who transported a modest but nevertheless effective bamboo tripod by boat onto the London City airport runway. **[29]**

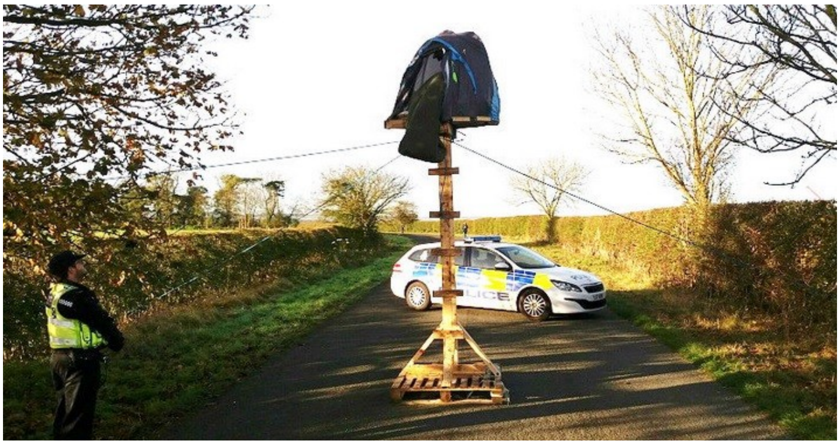


- Find somewhere to rehearse, so that you can put the structure up quickly and lock-on comfortably.
- The positioning of the holes in the fencing will depend on the length of the scaffolding poles.
- The strength and complexity of the arm locks will have a big effect on the durability of the compound lock-on.
- The activists inside the cage can look after those locked on, distribute water and do media work.

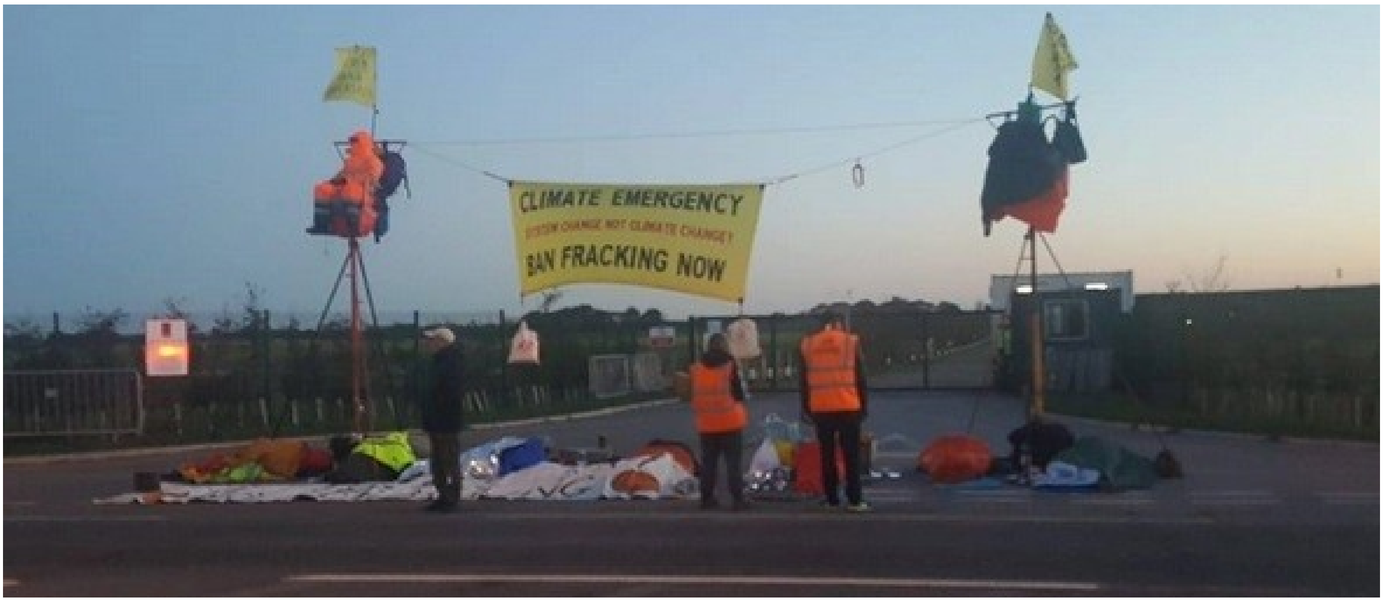
To gain more time protesters have experimented with “**Combinations**” of equipment. For example the “Heathrow 13” used a tripod threaded through a cage of “Heras” fencing protected by people in lockon tubes and D-locks. The idea was the person on the tripod who was live-streaming the action was the last one reached by the removal team. **[30]**



It’s always exciting to see new ideas emerge – for instance the “**Giant Toblerone Towers”** of Kirby Misperton. **[31]** These appeared in 2017 made from maybe three 8x4 foot plywood panels fixed into a triangular shape and in lying-down-mode looked rather like the advertising boards at sports grounds. But after lots of dancing, magical incantations, plus some willing hands, these became mini-towers with people sitting on the top just out of reach!

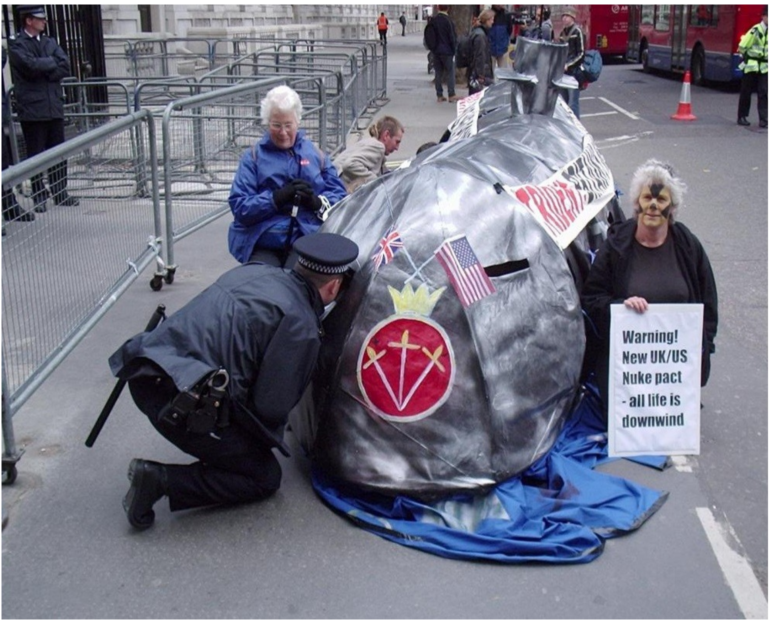


Imaginative “**Bird Table Towers**” were also used to block roads about the same time. **[32]**



Sorry if this is wrong but the record of a **Sixty hour lockon blockade** goes to the “Twin Towers” anti-fracking action at PNR which also famously won their case in the courts. **[33]**

Anything novel gets the PRT guessing and imaginative street-theatre stunts open up many possibilities. For example, a team of anti-nuclear campaigners assembled themselves into a **walking Trident submarine** that just happened to grind to a halt and sink to the ground outside Downing Street! **[34]**



Some teams have simply doused themselves with fluorescent paint. A choice of colours is available. **[35]**

Whilst scoring well for technical simplicity, the media appetite for semi-nudity, and sheer audacity, be aware the police could press charges for criminal damage to the road!

There are reports of substantial costs for a specialist road-cleaning team called out by the local council to remove slogans and graffiti paint actions on a road, despite perhaps minimal actual mess. People have pondered if such an action could be done on a tarp covering the road? If the edges of the tarp were rolled and taped over lengths of foam rubber, such as pipe-insulation, this could form a shallow paddling pool containing the fluorescent paint hence avoiding contact with the road. Police officers generally don't want to get their uniforms messy so this would be an interesting challenge for the PRT.

The lineage of this idea stretches back to the women at the Greenham Common protest who once stripped and smeared themselves with grease so the police couldn't catch hold of them to move them.

32) Teamwork and Welfare

Even the best lockon in the world is wasted if it gets captured on the way to the action, or your team falls apart, or someone unlocks to go for a pee!

Checkout the Earth-First manual **[1]** or Delia Smith's book of Basic Blockading **[4]** on the vital role of your support team.

Remember the people lying on a cold wet road will really appreciate carpet or foam mats, they'll need protections from the rain (full-size hill-walker's tough plastic "survival bags" are cheap & simple which work amazingly well), from the cold (blankets, duvets, etc) from sun, thirst, hunger, boredom, panic, etc. They'll also need personal reassurance, protection from traffic, protection from irritate people, etc.

It's important to stress the benefits of **ADULT NAPPIES**!!!! Standard adult nappies are available from some supermarkets and by mail-order for about a pound each. More absorbent types, as used overnight in nursing homes, are also available and should be given serious consideration when a long stay locked-on is anticipated. It's best to have a specialised welfare team for this task and sometimes they'll need to negotiate assertively with the police to perform their role.

The cops have been known to pull protesters in their tubes to the side of the road to so-say "*save them from oncoming traffic*". The presence of Legal Observers etc can be a really important as a deterrent.

Training really really does work.
So give yourselves time to have plenty of practice runs and role-plays.

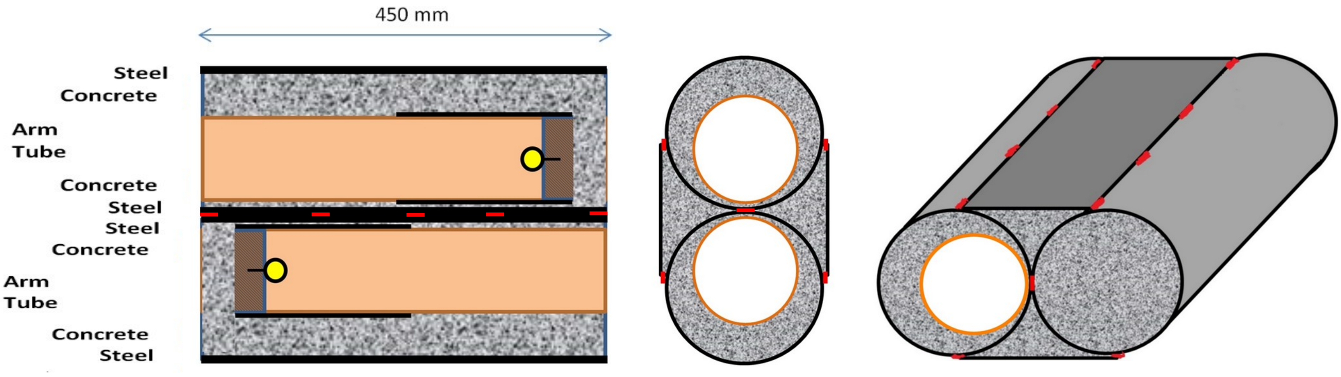
Train-up to be awesome!

33) Legalities

People have given legal briefings which include the following information, applicable to the UK. The police can stop and search your vehicle etc. They can legally seize equipment which might be used for **burglary** eg ropes, crow-bars etc and for **criminal-damage** eg hammers, spray-cans, felt-tip markers etc. But if they try to seize your blockading equipment the "*under what power*" question should be applied with vigour. Apparently the law is silent on the possession of such items. Since this booklet was in preparation the 2019 XR October Rebellion carried reports of "*conspiracy to obstruct the public highway*" and "*conspiracy to cause a public nuisance*"! Conspiracy trials are very rare and usually unsuccessful. But keep an eye on this.

34) Duo-Tubes as standard?

As deployment around urban areas becomes increasingly difficult the length of a standard 700mm lockon tube may become a drawback. Some people have suggested the duo-tube as standard? These would be easy to make from simple steel tubes. For longer cutting times consider this steel/concrete design:-



Side View Section Section View 3D View Welds shown in Red

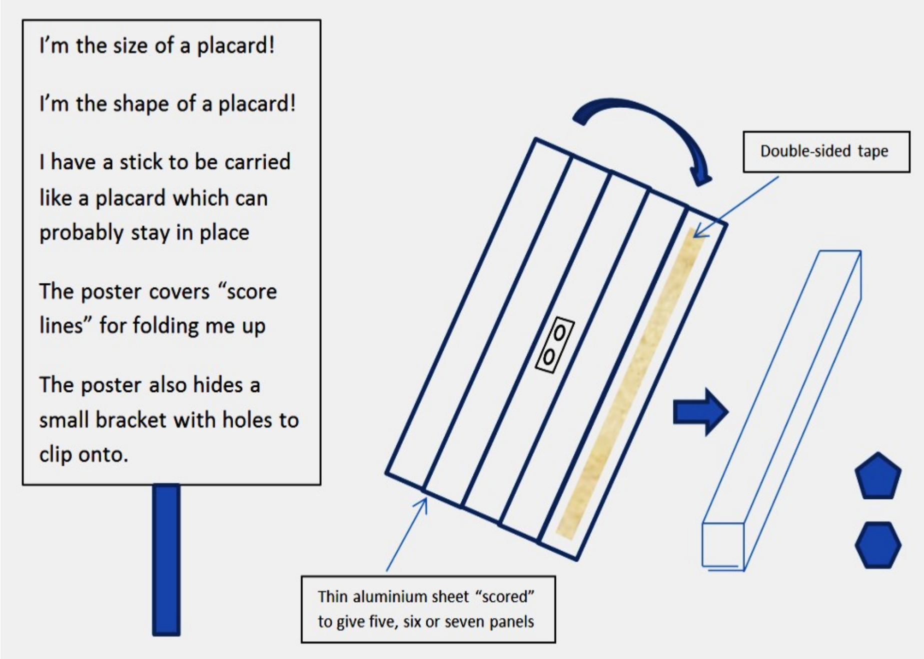
Although wider, the reduced length makes for a more compact bundle. The plastic arm tubes can be "biased" towards the middle. They can also be protected with say 200mm long 114.3 mm wide steel sleeves. Incorporating chicken wire or mesh in the concrete and other extras would be useful. Steel reinforcing plates can be welded across the outsides of the tubes also filled with concrete. It's a fair guess the PRT will have to cut TWO windows to release people so these could be quite effective.

35) Looking forward

People ponder that setting up camps in town centres and moving in heavy lockons may become more and more difficult. Teams of smartly dressed people pulling suitcases or wheel-along shoppers could maybe form a useful courier service?

Perhaps devices could be manufactured in the camps using glue, Plaster-of-Paris or quick-setting chemical resins. People have also discussed the potential of drains and various street furniture.

People have day-dreamed of maybe a **"Magic-Placard"** which could be rolled into a simple light-weight lockon tube fixed with maybe double-sides tape (Toolstation Double Sided Carpet Tape 82644 £4.79 is surprisingly powerful).



I'm the size of a placard!

I'm the shape of a placard!

I have a stick to be carried like a placard which can probably stay in place

The poster covers "score lines" for folding me up

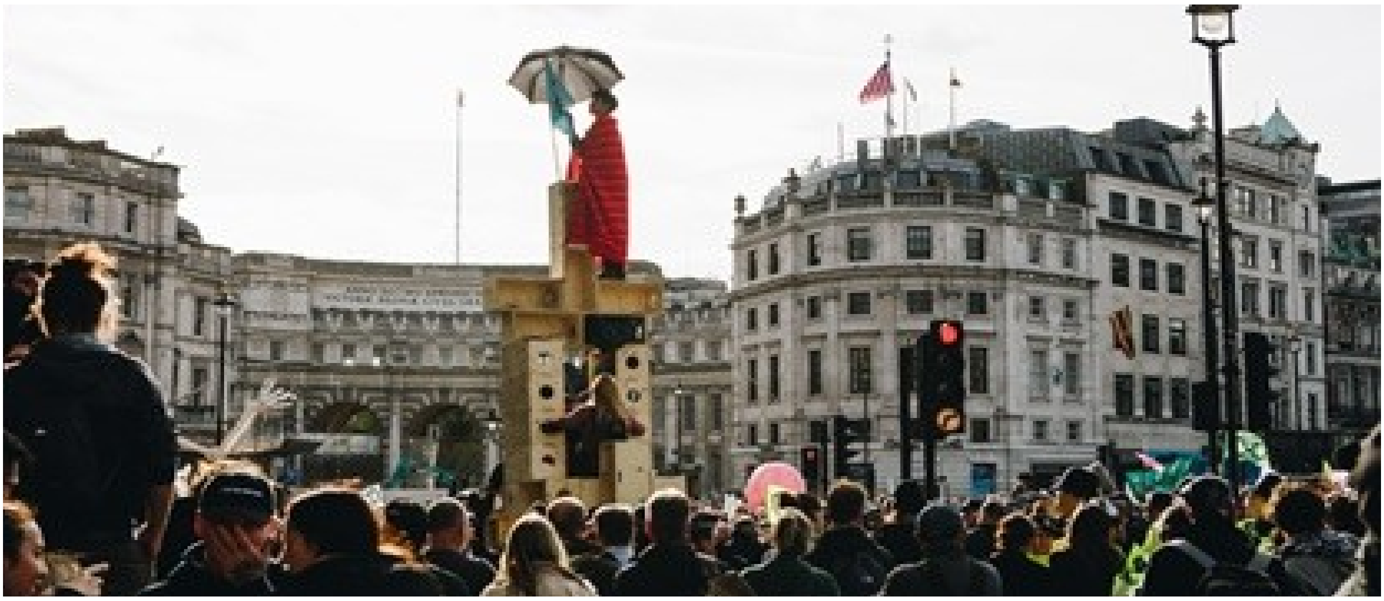
The poster also hides a small bracket with holes to clip onto.

Double-sided tape
Thin aluminium sheet "scored" to give five, six or seven panels

Plastic “correx” as used on estate agents signs would be a good start - presumably the PRT would still be needed. A tougher device could be made from aluminium sheet which has been “scored” (perhaps by setting the blade on a circular saw to a depth of a millimetre or so) and bent into shape by hand when needed? Designs with five, six, seven panel give a square, pentagon, or hexagon shaped lockon tubes.

People have also pondered some sort of “**Magic-Body-Board**” worn like a rucksack consisting of a supportive panel the size of the person’s torso fixed to two steel lockon tubes. The idea is a team deploy in a square/circle with people lying on their backs and each person’s arms locked into the tubes under their neighbour’s body-board. It’s only an idea so far but great if someone could get something like this to work where people’s bodies are protecting the lockons from cutting. Escher drawings might be an inspiration?

The “modular” approach is very impressive where lots of people each bring an innocent small element, which when assembled take on a new form.



Especially impressive was the re-purposing of plywood Lego/U-Build boxes **[36]** into artistic lock-on towers during the XR October Rebellion in London in 2019. Ways of using height as well as lockons is a logical development as PRT teams play catch-up with their skills and equipment.

A current mantra is “**Height & Durability & Precariousness**”. Play safe! But be imaginative as new ideas and refinements are emerging all the time.

It will be good to see what the collective imagination comes up with!

36) The role of lockons in XR

It’s important to be aware of and sensitive to the debate within XR regarding lockon equipment. **Roger Hallam** argues **AGAINST** the use of lockons and encourages mass civil disobedience **[37]**. It’s true the primary aim is to engage the wider public, either directly or via the media, sounding the alarm on climate change and to leverage cascading public support. Hence it can be argued that blockading using lockon equipment isn’t necessarily the primary method of achieving this. However, some people argue that lockons can be a choice in some situations and can support that process. For example a group that performs a theatrical action in front of the offices of some earth-destroying company enhance their effectiveness, duration, and newsworthiness by also locking-on across their prestigious entrance. Or camps set up to block and transform central areas of major cities can resist eviction for much longer with large numbers of people in lockons?

WE HOPE THIS GUIDE HELPS????????????????

37) Endnotes

Prices and suppliers – this booklet quotes prices and ordering codes from common UK suppliers such as Toolstation and Screwfix plus Builders Merchants such as Selco, B&Q, and occasionally Poundland. Obviously some information and particularly prices will change over time. People may also have their preferred mail-order suppliers but it's always wise to check you're ordering an equivalent product.

Internet sources can disappear over time so we've tried to include enough information should you need to make a fresh search. As an extra backup we've included duplicate links from the "Wayback Machine" - The Internet Archive, is a non-profit project building a digital library of, well, almost everything! FFI https://archive.org/web/

[1] First Direct Action Manual [3rd Edition] (2015) **-** A wealth of useful information on all sorts of NVDA, from tree-houses to mono-pods, plus much wisdom on organising, security, team-work etc. It's American so measurements and language differ, it's a few years old, but its a great read! Details of lock-ons (Lock-boxes) are rather general, but it's a good starting point
https://archive.org/details/direct_action_manual_3

[2] Direct Action Movement DAM Australian site to inspire & inform activism includes a useful online resource on Lockons www.thedirectactionmovement.com/lockons-treesits

[3] Wikipedia includes a brief entry on Lockons https://en.wikipedia.org/wiki/Lock-on_(protest_tactic)

[4] Delia Smith's book of Basic Blockading is great on the vital role of your support team
https://toleratedindividuality.files.wordpress.com/2015/02/basic-blockading.pdf
also at https://organizingforpower.org//wp-content/uploads/2009/08/basic-blockading.pdf
and at https://web.archive.org/web/20190613185921/https://organizingforpower.org//wp-content/uploads/2009/08/basic-blockading.pdf

[5] Road Raging – book written during the Anti-Roads Protest movement of the 1990s
http://www.eco-action.org/rr/
also at https://web.archive.org/web/20191024135251/http://www.eco-action.org/rr/ch12.html

[6] Kate Evans "Copse: Cartoon Book of Tree Protesting" - a beautifully illustrated book of the 1990s Newbury By-pass protest. Whole book available from good outlets and some pages have been archived at
https://archive.org/details/copse_zine

[7] National Eviction Team is a UK private limited company who say they've undertaken "*more evictions of demonstrators, protesters and travellers than anyone else in the country*". Their website describes some of their work and shares some useful examples on lockons, tunnels, etc. For example
https://nationalevictionteam.co.uk/news/2018/lock-ons-concrete-barbed-wire-booby-traps
also at https://web.archive.org/save/https://nationalevictionteam.co.uk/news/2018/lock-ons-concrete-barbed-wire-booby-traps

[8] Police Report of over 500 protestor removals during the Faslane-365 blockade in Scotland 2006-7
www.npcc.police.uk/documents/FoI%20publication/Disclosure%20Logs/Uniformed%20Operations%20FOI/2014/003%2014%20ACPO%20Response%20att%2001%20of%201%20Faslane%20365.pdf
also at https://web.archive.org/web/20200504103557/https://www.whatdotheyknow.com/request/191598/response/487071/attach/4/ACPO%202007%20Guidance%20on%20Dealing%20with%20the%20Removal%20of%20Protestors.pdf
also at
https://www.whatdotheyknow.com/request/191598/response/487071/attach/4/ACPO%202007%20Guidance%20on%20Dealing%20with%20the%20Removal%20of%20Protestors.pdf

The videos in these news reports below are REALLY REALLY informative
Sorry archive.org doesn't archive youtube videos

[9] LBC News on 15th October 2019 entitled **"***Police Officer reveals the Extinction Rebellion equipment they had to cut through*" and goes on to say "*297 Extinction Rebellion protesters had to be cut free by police after gluing or locking themselves to buildings. The Inspector in charge of their removal showed LBC the remarkable equipment they had to cut through.*"
https://www.youtube.com/watch?v=SF2WGNReYrY

[10] LBC News on 11th October 2019 entitled **"***Police reveal Extinction Rebellion protesters are using more advanced tactics*" and goes on to say "*The Met Police have released video footage of how their specialist Protest Release Teams are freeing Extinction Rebellion protesters in the capital.*"
https://www.lbcnews.co.uk/uk-news/police-reveal-extinction-rebellion-protesters-are/

[11] Fragments of a Rebellion - an hour-long documentary giving a street level view of the two week October 2019 action which resulted in over eighteen hundred arrests of peaceful protesters. It includes several valuable sequences showing PRT cutting lockon tubes
https://www.youtube.com/watch?v=ZhjjD0hqPJE

Four examples of how Police media propaganda will exploit real or suggested safety issues:-

[12] *"Extinction Rebellion protesters hide NAILS and BLADES in 'lock-on' tubes to make removing them more dangerous, police claim"*
https://www.thesun.co.uk/news/10119746/extinction-rebellion-protesters-nails-blades-police/
also at
https://web.archive.org/web/20191022071824/https://www.thesun.co.uk/news/10119746/extinction-rebellion-protesters-nails-blades-police/

[13] *"We've had protestors making it harder and more dangerous for us, and may have nails in it, blades in it, any type of sharp metal in the concrete......."*
https://www.lbcnews.co.uk/uk-news/police-reveal-extinction-rebellion-protesters-are/

[14] *"There are often booby traps as well, such as pressurised aerosol cans put in the concrete to explode when the enforcement agent tries to remove them."*
https://nationalevictionteam.co.uk/news/2018/lock-ons-concrete-barbed-wire-booby-traps

[15] "*Protesters lock-on to 'booby-trapped' concrete drum filled with barbed wire and broken glass*"
https://www.manchestereveningnews.co.uk/news/greater-manchester-news/officer-hurt-after-barton-moss-6744778
also at
https://web.archive.org/web/20170730110212/http://www.manchestereveningnews.co.uk:80/news/greater-manchester-news/officer-hurt-after-barton-moss-6744778
Images don't show in article but available separately at
https://web.archive.org/web/20200521213421/https://www.manchestereveningnews.co.uk/news/greater-manchester-news/gallery/booby-trapped-6745021?service=responsive

[16] Well illustrated V&A Museum blog article in 2014 for the "Disobedient Objects" exhibition on how Greenpeace make their lockons tubes.
https://www.vam.ac.uk/blog/disobedient-objects/locked-on
also available here but many images missing
https://web.archive.org/web/20190313113033/https://www.vam.ac.uk/blog/disobedient-objects/locked-on

[17] Anti-fracking "Stop-the-Start" blockade at Preston New Road in Blackpool where an impressive banner/structure complete with lockons was erected on the roof of a van.
https://reclaimthepower.org.uk/news/stop-the-start-of-fracking/
also at
https://web.archive.org/web/20190806004140/https://reclaimthepower.org.uk/news/stop-the-start-of-fracking/

[18] Large Lockon made by fixing several tyres together and filling with concrete
www.blackpoolgazette.co.uk/news/road-block-and-protests-cuadrilla-begins-fracking-process-242319

[19] Report and pictures of a massive lockon tube built inside a very wide tube or barrel
https://drillordrop.com/2019/06/03/picture-post-20-hour-lock-on-protest-at-west-newton-drill-site/
and similar large devices used here
https://web.archive.org/web/20200521215156/https://www.dailyecho.co.uk/news/15555640.amp/
and here
https://www.getsurrey.co.uk/news/surrey-news/anti-fracking-protesters-lock-on-protest-horse-7982965
and here
https://news.bournemouth.ac.uk/2014/07/30/why-politics-needs-arts-crafts/

[20] The "substitution/bluff" deployment during Faslane-365 Blockade and described on pages 60-61 in the Police report described earlier in the link at [8]
www.npcc.police.uk/documents/FoI%20publication/Disclosure%20Logs/Uniformed%20Operations%20FOI/2014/003%2014%20ACPO%20Response%20att%2001%20of%201%20Faslane%20365.pdf

[21] A good example of the photogenic value of D-Locks – In a protest against St Brides's PR company which was employed by the fracking industry, three women protesters dressed as brides and locked themselves to the prestigious front door of their offices. A grappling type hook was inserted through the letterbox which held a structure against the door to which the D-locks were attached.
https://drillordrop.com/2017/04/04/protest-update-3-9-april-2017/st-brides-pr-reclaim-the-power-170404/
also at
https://web.archive.org/web/20200521220847/https://drillordrop.com/2017/04/04/protest-update-3-9-april-2017/st-brides-pr-reclaim-the-power-170404/

[22] A pair of protesters block the road by sitting back-to-back locking their necks together with D-Locks
https://www.bbc.co.uk/news/uk-england-london-38038313
also at
https://web.archive.org/web/20161124162404/https://www.bbc.co.uk/news/uk-england-london-38038313

[23] Thumb-locks: in the style of key-rings, this design is quite inexpensive but the joining chain is easily cut unless in an inaccessible position.
https://www.aliexpress.com/i/32807331185.html?spm=2114.12057483.0.0.6b9e47ccSznSd4

[24] Thumb-locks: more expensive but more solid construction.
https://www.amazon.com/Martial-Professional-Steel-Police-Thumbcuffs/dp/B000B4ZY1U

[25] Concrete pyramids called "Betonpramide" used during the CASTOR anti-nuclear train protests in Germany in the 1990s.
https://www.welt.de/politik/deutschland/article13738375/600-Kilo-Betonpyramide-sorgt-fuer-Castor-Rekord.html
also at

https://web.archive.org/web/20120324152211/https://www.welt.de/politik/deutschland/article13738375/600-Kilo-Betonpyramide-sorgt-fuer-Castor-Rekord.html

[26] Greenpeace protesters locked onto boxes gives the idea of "precariousness" - if the boxes supporting the tubes are weakened by being cut open to reach the tubes inside.
https://drillordrop.com/2017/11/03/ten-greenpeace-volunteers-acquitted-at-anti-fracking-protest-trial/

[27] Double-decker tripod at Kings North Climate Camp 2008
https://www.theguardian.com/environment/gallery/2008/aug/05/kingsnorthclimatecamp.climatechange
also but lacking image
https://web.archive.org/web/20150916211935/http://www.theguardian.com/environment/gallery/2008/aug/05/kingsnorthclimatecamp.climatechange#img-14
The key image is available here https://i.guim.co.uk/img/static/Guardian/environment/gallery/2008/aug/05/1/GD8213928@Protesters-put-up-a-'-4480.jpg?width=880&quality=85&auto=format&fit=max&s=1a5c60967442099c750b45fcd978d75d

[28] Double-decker tripod in Oxford Circus in the 2019 October Rebellion.
https://realmedia.press/xr-oxford-circus-tripod/

[29] Perhaps the record for the least-tall tripod goes to Black Lives Matters who transported a modest but nevertheless effective bamboo tripod by boat to block the London City airport runway.
https://www.independent.co.uk/news/city-airport-protest-black-lives-matter-activists-spared-jail-protests-climate-change-racism-police-a7307181.html

[30] "**Combinations**" of equipment. For example the "Heathrow 13" used a tripod threaded through a cage of "Heras" fencing protected by people in lockon tubes and D-locks. The idea was the person on the tripod who was live-streaming the action was the last one reached by the removal team.
https://www.vam.ac.uk/blog/disobedient-objects/plane-stupid-compound-lock-on

[31] The "**Giant Toblerone Towers**" at Kirby Misperton which appeared in about 2017/18
https://www.yorkpress.co.uk/news/ryedale/15598411.protesters-occupy-a-third-tower-at-kirby-misperton-fracking-site/
also at
https://web.archive.org/save/https://www.yorkpress.co.uk/news/ryedale/15598411.protesters-occupy-a-third-tower-at-kirby-misperton-fracking-site/
and pictures at
https://web.archive.org/web/20200522214602/https://www.yorkpress.co.uk/resources/images/6948635/?type=responsive-gallery-fullscreen
also at
https://www.yorkpress.co.uk/resources/images/6948635/?type=responsive-gallery-fullscreen

[32] Imaginative "**Bird Table Towers**" used at Kirby Misperton
https://www.cumbriacrack.com/2017/10/30/kirby-misperton-fracking-protesters-erect-wooden-towers-middle-road/
also at
https://web.archive.org/web/20171119063653/https://www.cumbriacrack.com/2017/10/30/kirby-misperton-fracking-protesters-erect-wooden-towers-middle-road/

[33] Sixty hour lockon blockade success of the "Twin Towers" anti-fracking action at PNR
https://drillordrop.com/2019/03/26/trial-collapses-against-nine-anti-fracking-protesters-in-60-hour-lock-on/
also at

https://web.archive.org/web/20190330135043/https://drillordrop.com/2019/03/26/trial-collapses-against-nine-anti-fracking-protesters-in-60-hour-lock-on/

[34] Street-theatre style action of a “walking Trident submarine” that blocks Downing Street www.scoop.co.nz/stories/WO0410/S00143/trident-submarines-5-hour-blockade-of-downing-st.htm

[35] Protest group that doused themselves with fluorescent paint during the Faslane-365 blockade http://joescarry.blogspot.com/2014/09/scotland-independence-nuclear-disarmament-no-place-for-trident.html

[36] Modular plywood boxes used to build seats, stages, and towers etc incorporating large holes for lock-ons. www.dezeen.com/2019/10/17/extinction-rebellion-protest-architecture/
also at
https://web.archive.org/web/20191019020958/https://www.dezeen.com/2019/10/17/extinction-rebellion-protest-architecture/

[37] Roger Hallam writes….“*The process is the key mechanism through which to create sympathy from supporters ……This is a good reason then to stop using lock-ons and other physical equipment for blockades and to just use our bodies.*” Version 0.3 Page 40. **Common Sense For The 21st Century**
www.rogerhallam.com
The book itself (v0.3) is here:
https://www.rogerhallam.com/wp-content/uploads/2019/10/Common-Sense-for-the-21st-Century_by-Roger-Hallam-Early-Draft-v0.3.pdf
and archived here (version 15th April):
https://web.archive.org/web/20190503090303/https://www.rogerhallam.com/wp-content/uploads/2019/04/Common-Sense-For-The-21st-Century-Roger-Hallam.pdf
NOTE there have been several early versions of this book, the reference to lockons is NOT on page 40 in every edition! (e.g p32/33 in the version above, p38 in the one above that).

ENDS